CRPL-F64

IONOSPHERIC DATA

ISSUED
DECEMBER 1949

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
WASHINGTON, D. C.

CRPL-F 64

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
WASHINGTON, D.C.

Issued
27 Dec. 1949

IONOSPHERIC DATA

CONTENTS

SYMBOLS AND TERMINOLOGY; CONVENTIONS FOR DETERMINING MEDIAN VALUES

Beginning with data reported for January 1949, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Fifth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Stockholm, 1948, and given in detail on pages 2 to 10 of the report CRPL-F53, "Ionospheric Data," issued January 1949.

For symbols and terminology used with data prior to January 1949, see report IRPL-C61, "Report of International Radio Propagation Conference, Washington, 17 April to 5 May, 1944," previous issues of the F series, in particular, IRPL-F5, CRPL-F24, F33, F50, and report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

Following the recommendations of the Washington (1944) and Stockholm (1948) conferences, beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

In addition to the conventions for the determination of medians given in Appendix 5 of Document No. 293 E of the Stockholm conference, which are listed on pages 9 and 10 of CRPL-F53, the following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given on pages 2-9 of CRPL-F53 (Appendixes 1-4 of Document No. 293 E referred to above).

a. For all ionospheric characteristics:

Values missing because of A, B, C, F, L, M, N, Q, R, S, or T (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of foF2 (and foE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of h'F2 (and h'E near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:
1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:
1. For foF2, as equal to or less than the median when it is apparent that h'F2 is unusually high; otherwise, values missing because of W are omitted from the median count.
2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are countéd as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of G (no Es reflections observed, the equipment functioning normally otherwise) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD-WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 34 and figures 1 to 68 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

British Department of Scientific and Industrial Research,
Radio Research Board:
Lindau/Harz, Germany

Radio Wave Research Laboratory, Central Broadcasting Administration:
Chungking, China
Lanchow, China

French Ministry of Naval Armaments (Section for Scientific Research):
Dakar, French West Africa
Fribourg, Germany

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India
Tiruchirapalli, India

Indian Council of Scientific and Industrial Research,
Radio Research Committee:
Calcutta, India

Electrical Communications Laboratory, Ministry of Communications:
Fukaura, Japan
Shibata, Japan
Tokyo (Kokubunji), Japan
Wakkanai, Japan
Yamakawa, Japan

Norwegian Defense Research Establishment, Kjeller per Lillestrom, Norway:
Oslo, Norway

South African Council for Scientific and Industrial Research:
Capetown, Union of South Africa

National Bureau of Standards (Central Radio Propagation Laboratory):
- Baton Rouge, Louisiana (Louisiana State University)
- Boston, Massachusetts (Harvard University)
- Guam I.
- Huancayo, Peru (Instituto Geofisico de Huancayo)
- Maui, Hawaii
- Palmyra I.
- San Francisco, California (Stanford University)
- San Juan, Puerto Rico (University of Puerto Rico)
- Trinidad, British West Indies
- Washington, D. C.
- White Sands, New Mexico

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

a. Differences in scaling records when spread echoes are present.

b. Omission of values when foF2 is less than or equal to foF1, leading to erroneously high values of monthly averages or median values.

c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of foE. Blank spaces at the beginning and end of columns of h'F1, foF1, h'E, and foE are usually the result of diurnal variation in these characteristics. Complete absence of medians of h'F1 and foF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.

b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.

c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

Month	Predicted Sunspot No.				
	1949	1948	1947	1946	1945
December		114	126	85	38
November	112	115	124	83	36
October	114	116	119	81	23
September	115	117	121	79	22
August	111	123	122	77	20
July	108	125	116	73	
June	108	129	112	67	
May	108	130	109	67	
April	109	133	107	62	
March	111	133	105	51	
February	113	133	90	46	
January	112	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 35 to 46 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols and Terminology; Conventions for Determining Median Values." Beginning with September 1949, the data are taken at a new location, Ft. Belvoir, Virginia.

Table 47 presents ionosphere character figures for Washington, D. C., during November 1949, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 48 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at the Sterling Radio Propagation Laboratory and at Ft. Belvoir, Virginia, during November 1949. The taking of SID records at Sterling, Virginia, was discontinued on November 14, 1949, at 1350 GCT. Any SID reported after November 14, 1949, were observed at Ft. Belvoir, Virginia.

Table 49 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., for various days in October and November 1949.

Table 50 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanos, Argentina, receiving station of the International Telephone and Telegraph Corporation for various days in September, October, and November 1949.

Table 51 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Riverhead, New York, receiving station of RCA Communications, Inc., for November 19, 1949.

Table 52 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Point Reyes, California, receiving station of RCA Communications, Inc., for November 6-7, 1949.

Table 53 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, October 1949, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all the disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 54a and 54b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during November 1949 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5-degree intervals of position angle north and south of the solar equator at the limb. Beginning January 11, 1949, the actual measurements are on solar rotation coordinates rather than astronomical coordinates; thus values of the correction P given in previous coronal tables are omitted. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 55a and 55b give similarly the intensities of the first red (6374A) coronal line; tables 56a and 56b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 54, 55, and 56: a, observation of low weight; -, corona not visible; and x, position angle not included in plate estimates.

AMERICAN AND ZÜRICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 57 presents the daily American relative sunspot number, R_A, computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of all observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated R_A. It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A. The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z.

PRELIMINARY MEAN K-INDICES, PRELIMINARY INTERNATIONAL CHARACTER FIGURES, MAGNETICALLY SELECTED DAYS

Table 58 gives preliminary mean K-indices for January through September 1949 from magnetic observatories widely distributed over the Earth's surface.

Table 59 gives preliminary C-figures for January through September 1949 from many world observatories.

Table 60 gives the quiet and disturbed days preferentially selected by the four magnetic criteria: C-figures, sums of the eight daily mean K-indices, the greatest daily K-index, and the sums of the squares of the eight daily mean K-indices.

These three tables have been furnished by the courtesy of the Committee on Characteristics of Magnetic Disturbance, Association of Terrestrial Magnetism and Electricity, International Union of Geodesy and Geophysics. The majority of the world's magnetic observatories have cooperated in supplying the data, and the Meteorological Office, De Bilt, Holland, has efficiently assembled and compiled the summary tables.

ERRATUM

CRPL-F63, p. 57, fig. 65: The upper curve of critical frequency at 14, 15, and 16 hours should be labeled "F2" instead of "Es."

INDEX OF IONOSPHERIC DATA PUBLISHED IN 1949

(CRPL-F53 THROUGH F64)

The following index of tables and graphs of ionospheric data published in the CRPL-F series in 1949 is divided into three parts. Part I is an index of data observed in 1948 and 1949. Part II is an index of data observed prior to 1948. Part III is an index of errata published in 1949 concerning tables and graphs of data from ionosphere stations.

Both table and graph for the given station for a given month appear in the same issue.

Indexes of ionospheric data published prior to 1949 are in IRPL-F17, CRPL-F28, F40, and F52.

PART I

Index of Tables and Graphs of Ionospheric Data Observed in 1948 and 1949 and Published in 1949 (CRPL-F53 through F64)

Station	1948												1949											
	J	F	M	A	M	J	JY	A	S	O	N	D	J	F	M	A	M	J	JY	A	S	O	N	D
Bagneux, France					53*	56*	56*		57*	57*	59						63							
Baton Rouge, Louisiana											53	54	55	56	57	58	59	60	61	62	63	64		
Bombay, India							54	54	54	55	56	57	57	58	60	61	62	63	64					
Boston, Massachusetts											53	54	55	56	57	58	59	60	61	62	63	64		
Brisbane, Australia								55	53	54	55	56	58	59	59	60	61	63	63					
Calcutta, India	62	62	62	62	62	62	62	62	57	57	59	59	60	60	62	62	64	64						
Canberra, Australia									53	54	55	56	58	59	59	60	61	63	63					
Capetown, Union of S. Africa										53	54	55	56	57	58	59	60	62	62	64				
Christchurch, New Zealand										54	54	55	56	58	59	60	61	62	63	63				
Chungking, China										54	54	56	56	58	60	59	60	62	64	64				
Dakar, French West Africa																	64	64						
Delhi, India							54	54	54	55	56	57*	57	58	60	61	62	63	64					
Falkland Is.						53	53	57	56	56	59	59	60											
Fraserburgh, Scotland							53	53	57	56	56	59	59	60										
Fribourg, Germany				53	53	53	59	59	59	58	58	58	61	61	61	64	64	64						
Fukaura, Japan										54	55	56	61	61	60	60	61	62	63	64				
Guam I.											53								61	62	63	64		
Hobart, Tasmania									54	54	56	56	59	59	59	60	61	63*	63					
Huancayo, Peru											53	54	55	56	57	58	59	60	61	62	64	64		
Johannesburg, Union of S. Africa										53	54	55	56	57	58	59	60	61	62	63				
Lanchow, China									54	54	56	56	58	60	59	60	62	64						
Lindau/Harz, Germany										53	54	54	56	57	58	58	59	62	62	63	64			
Madras, India							54	54	54	55	56	57	57	58	60	61	62	63	64					
Maui, Hawaii											53	54	55	56	57	58	59	60	61	62	63	64		
Nanking, China									54	54	56	56												
Okinawa I.											54*	54*	55*	56*	57*	60	61	61	61					
Oslo, Norway																	61	61	61	62	63	64		
Palmyra I.											53	54	55	56	57	58	59	60	61	62	64			
Peiping, China										54	54													
Poitiers, France							56*	57*	57*	57*	59*	59*	61*	61*	61*	61*	63							
Rarotonga I.									54	54	55	56	58	59	60	60	63	63	63					
San Francisco, California											53	54	55	56	57	58	59	60	61	62	63	64		
San Juan, Puerto Rico											53	54	55	56	57	58	59	60	61	62	63	64		
Shibata, Japan								53		54	55	56	61	61	60	60	61	62	63	64				
Singapore, British Malaya											56*	59*	59*	60										
Slough, England							53	53	57	56	56	59	59	60										
Tiruchirapalli, India														58	60*	61	62	63	64					
Tokyo, Japan										54	55	56	61	61	60	60	61	62	63	64				
Trinidad, British West Indies											53	54	55	56	57	58	59	60	61	62	63	64		
Wakkanai, Japan										54	55	56	61	61	60	60	61	62	63	64				
Washington, D. C.												53	54	55	56	57	58	59	60	61	62	63	64	
Watheroo, West Australia									55	54	54	56	56	58	58	60	60	62	63	63				
White Sands, New Mexico											53	54	55	56	57	58	59	60	61	62	63	64		
Wuchang, China											53	55	55	56	57	60								
Yamakawa, Japan										54	55	56	61	61	60	60	61	62	63	64				

*See part III for index to errata on these data.

PART II

Index of Tables and Graphs of Ionospheric Data Observed Prior to 1948 and Published in 1949 (CRPL-F53 through F64)

Station	Month and year of data	F issue
Calcutta, India	January 1947 through September 1947 November 1947 and December 1947	62 62

PART III

Index of Errata Published in 1949* Concerning Tables and Graphs of Data from Ionosphere Stations

Station	Month and year of data	F issue	Page	Erratum No.
Bagneux, France	March 1947 through October 1948 (not complete)	58	9	2
Delhi, India	December 1948	58	9	1
Hobart, Tasmania	June 1949	64	10	1
Okinawa I.	October 1948 through March 1949	58	9	2
Poitiers, France	July 1948 through April 1949	61	9	2
Singapore, British Malaya	November 1948	58	9	2
	December 1948	60	9	1
	January 1949	60	9	2
Tiruchirapalli, India	March 1949	61	9	1

*An individual erratum may refer to issues prior to CRPL-F53.

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	5.7						2.8
01	265	(5.5)						(2.8)
02	260	5.4						2.8
03	270	5.2						2.8
04	260	(4.7)						(2.8)
05	270	4.4						2.8
06	260	4.2						2.8
07	230	7.2			120	1.8		3.1
08	220	10.0			110	2.4		3.3
09	220	11.8			100	2.9		3.2
10	220	12.0	---	---	100	3.1		3.1
11	230	13.0	---	---	110	3.4		3.0
12	220	13.1	---	---	110	3.4		2.9
13	230	13.0	---	---	110	3.4		2.9
14	230	13.0	---	---	110	3.2		2.9
15	230	12.9	---	---	110	2.9		2.9
16	220	12.4	---	---	110	2.2		3.0
17	210	11.4			(100)	---		3.0
18	220	10.1						2.9
19	220	8.8						3.0
20	230	7.2						3.0
21	240	(6.6)						(2.9)
22	250	(6.3)						(2.9)
23	250	(6.0)						(2.9)

Time: 75.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 2

Oslo, Norway (60.0°N, 11.0°E) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	350	3.2						(2.4)
01	350	3.4						(2.4)
02	350	3.0					2.4	(2.5)
03	350	2.9					2.4	(2.5)
04	340	2.8						(2.5)
05	310	3.2						(2.6)
06	285	3.9			---	---		(2.6)
07	260	5.0			150	2.0		2.9
08	240	7.0	---	---	120	2.3	3.0	3.0
09	240	7.8	---	---	115	2.6		2.9
10	240	>8.5	---	---	115	2.8		2.8
11	240	>8.7	255	---	110	2.9		2.8
12	240	>9.0	250	---	110	3.0		2.8
13	240	>9.0	---	---	110	3.0		(2.8)
14	240	>9.0	---	---	110	2.9		(2.8)
15	240	>9.0	---	---	118	2.6		(2.9)
16	240	>9.0			122	2.4		(2.9)
17	240	>8.5			140	2.1		(3.0)
18	240	>8.0			---	E		(3.0)
19	240	6.0						2.8
20	245	5.0						(2.8)
21	270	4.0						(2.6)
22	310	3.8						2.6
23	320	3.6						(2.6)

Time: 15.0°E.
Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Table 3

Boston, Massachusetts (42.4°N, 71.2°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	275	5.9						2.6
01	292	5.4						2.6
02	275	5.3						2.6
03	282	4.8						2.6
04	300	4.4						2.5
05	290	4.2						2.6
06	280	5.2						2.8
07	260	9.0						3.0
08	255	9.7						3.1
09	268	10.8						3.0
10	275	11.2						3.0
11	268	11.5						3.0
12	260	11.7						3.0
13	260	11.7						2.9
14	275	11.4						2.9
15	265	11.0						2.9
16	260	11.4						3.0
17	260	10.6						3.0
18	250	9.9						2.9
19	262	9.2						2.8
20	265	7.6						2.8
21	275	7.2						2.7
22	280	6.8						2.6
23	295	6.3						2.6

Time: 75.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 4

San Francisco, California (37.4°N, 122.2°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	4.4					2.7	2.6
01	310	4.4					3.0	2.6
02	320	4.6					3.0	2.6
03	300	4.4					2.9	2.6
04	300	4.5					3.0	2.7
05	300	4.4					2.9	2.6
06	280	5.0	---	---	110	1.6	2.9	2.8
07	235	7.6	---	---	120	2.4	3.2	3.1
08	230	10.0	240	---	110	2.8	4.7	3.1
09	230	11.2	220	---	110	---	4.4	3.0
10	240	12.0	220	---	110	3.6		3.0
11	240	13.1	220	4.6	110	3.7	4.1	2.9
12	250	13.2	230	---	110	3.7		2.9
13	---	13.4	230	---	110	---		2.8
14	240	13.4	240	---	110	---		2.8
15	240	13.1	240	---	110	3.2		2.9
16	240	12.4	240	---	110	2.8	3.4	3.0
17	230	11.6	---	---	100	2.2	3.1	3.0
18	220	9.8					2.9	3.0
19	220	7.6					3.0	3.0
20	230	6.0					3.0	3.0
21	250	5.1					2.7	3.0
22	265	4.8					2.9	2.9
23	280	4.6					2.6	2.8

Time: 120.0°W.
Sweep: 1.2 Mc to 18.0 Mc in 4 minutes.

Table 5

White Sands, New Mexico (32.3°N, 106.5°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.1					3.1	2.6
01	290	5.0					3.2	2.6
02	300	5.0					3.3	2.6
03	280	4.7					3.0	2.6
04	280	4.8					2.6	2.6
05	290	4.7					2.6	2.6
06	270	5.5			120	(1.7)	2.8	2.7
07	240	9.0			110	(2.4)	3.8	3.1
08	230	10.8	---	---	110	2.8	4.0	3.1
09	230	11.9	220	---	110	3.2	4.3	2.9
10	230	12.5	220	4.5	110	3.5	4.1	2.8
11	230	13.1	220	4.4	110	3.6	4.1	2.8
12	230	13.3	220	---	110	3.7	4.2	2.8
13	230	12.4	230	---	110	3.7	4.8	2.8
14	240	13.3	230	---	110	3.8	4.6	2.7
15	240	13.1	240	---	110	3.3	4.2	2.8
16	240	12.6	---	---	110	2.7	4.0	2.8
17	240	12.0			110	(2.2)	3.6	2.9
18	220	10.5					3.1	2.9
19	220	8.2					3.1	2.8
20	240	6.6					3.3	2.8
21	260	5.4					2.6	2.6
22	270	5.2					3.1	2.6
22	280	5.2					2.7	2.6

Time: 105.0°W.
Sweep: 0.8 Mc to 14.0 Mc in 2 minutes.

Table 6

Baton Rouge, Louisiana (30.5°N, 91.2°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	5.6						2.8
01	315	5.6						2.8
02	300	5.6						2.8
03	300	5.2						2.8
04	310	5.1						2.7
05	320	4.7						2.8
06	290	6.0						2.9
07	270	9.1	245	---	---	---		3.0
08	270	10.9	250	---	120	3.0		3.1
09	290	11.6	230	---	120	3.3		3.0
10	300	12.2	230	---	120	(3.5)		2.9
11	310	12.5	240	---	110	(3.6)		2.9
12	320	12.8	240	---	120	3.7		2.9
13	320	12.7	250	---	120	(3.6)		2.8
14	310	(12.6)	250	---	120	3.5		2.9
15	210	12.5	260	---	120	(3.4)		2.9
15	300	12.2	260	---	130	2.9		2.9
17	280	11.6	250	---	120	---		3.0
18	250	(10.2)						3.0
19	260	8.4						2.9
20	270	7.1						3.0
21	290	6.2						2.9
22	310	5.7						2.8
23	310	5.7						2.7

Time: 90.0°W.
Sweep: 2.12 Mc to 14.1 Mc in 5 minutes, automatic operation.

Table 7

Maui, Hawaii (20.8 N, 156.5°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.1						2.9
01	250.	7.6					1.1	3.0
02	240	6.0						3.0
03	250	4.8						2.8
04	300	3.9						2.6
05	310	4.0						2.5
06	350	4.5						2.5
07	280	8.3			130	2.3		3.0
08	260	11.3	260	---	130	2.9		3.0
09	280	12.5	250	---	120	3.3		2.9
10	310	(14.2)	240	---	120	3.6		(2.9)
11	310	(14.6)	240	---	120	3.7		(2.9)
12	350	(15.0)	230	6.9	120	3.8		(2.8)
13	360	(15.4)	240	7.0	120	3.8	4.0	(2.8)
14	340	(16.0)	250	7.0	115	3.6	4.2	(2.9)
15	320	(15.9)	240	6.9	110	3.4	4.0	(2.8)
16	300	15.1	260	---	115	3.1	4.2	(2.9)
17	270	14.5	---	---	120	---	4.5	(2.9)
18	250	14.2			---	---	4.8	(2.9)
19	250	13.6					5.6	(2.9)
20	260	13.5					4.6	(2.8)
21	260	12.9					4.3	(2.9)
22	260	11.2					2.8	(2.9)
23	260	9.9					2.6	2.9

Time: 150.0°W.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 8

San Juan, Puerto Rico (18.4°N, 66.1°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	8.7						2.9
01	250	8.0						2.9
02	230	7.0						3.0
03	240	5.6						2.9
04	---	4.7						2.8
05	---	4.5						2.8
06	260	5.4						2.9
07	230	9.6		3.5		E		3.1
08	240	11.0		---		3.0		3.1
09	260	12.5		---		3.5		3.0
10	275	(13.0)		---		3.7		2.9
11	280	(13.0)		---		3.8		2.8
12	300	(13.0)		---		---		2.6
13	300	(13.0)		---		---		(2.7)
14	300	(13.0)		---		---		2.6
15	290	13.0		---		3.6		2.7
16	285	13.0		---		3.3		2.7
17	260	12.1		---		E	3.8	2.8
18	250	11.4						2.8
19	250	10.3						2.8
20	250	9.5						2.8
21	255	8.9						2.7
22	270	8.7						2.8
23	270	8.6						2.8

Time: 60.0°W.
Sweep: 2.8 Mc to 13.0 Mc in 9 minutes, automatic operation; supplemented by manual operation.

Table 9

Guam I. (13.6°N, 144.9°E) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	(12.1)					3.8	3.0
01	240	11.8					3.4	3.1
02	220	10.3					3.0	3.2
03	230	8.0					2.9	3.0
04	240	7.5					3.9	3.0
05	240	6.2					4.6	3.0
06	250	6.2					4.6	3.0
07	250	9.8			120	3.3	5.4	3.0
08	240	12.0	---	---	110	3.2	4.6	2.9
09	250	(12.4)	230	---	100	---	5.4	(2.6)
10	245	(12.8)	210	---	100	3.8	6.9	(2.4)
11	270	(11.6)	210	---	100	4.0	5.9	---
12	270	(11.9)	210	---	110	4.0	5.2	(2.4)
13	280	(13.4)	220	---	100	---	6.0	(2.4)
14	260	---	220	---	100	---	6.2	---
15	240	---	230	---	110	---	5.0	---
16	250	---	240	---	110	3.2	4.5	---
17	260	---	---	---	120	3.6	5.4	---
18	290	---					5.2	---
19	350	---					2.3	---
20	320	---					3.4	---
21	290	---					3.4	---
22	260	---					3.7	---
23	250	10.6					3.8	(2.9)

Time: 150.0°E.
Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 10

Trinidad, Brit. West Indies (10.6°N, 61.2°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	10.2						3.2
01	220	8.8						3.2
02	220	6.6						3.2
03	220	5.2						3.1
04	250	4.6						3.0
05	250	4.6						3.0
06	240	6.8					2.4	3.2
07	220	10.2			100	2.7	3.5	3.3
06	220	12.7	210	---	100	3.4	4.0	3.3
09	240	13.7	220	5.2	100	3.7	4.2	3.2
10	240	13.8	210	5.2	100	4.0	4.4	3.1
11	250	13.8	200	5.4	100	4.1	4.6	3.0
12	250	14.4	210	5.4	100	4.1	4.6	2.9
13	250	14.3	210	5.2	100	4.1	4.6	2.9
14	250	13.8	220	5.2	100	3.9	4.8	2.8
15	250	13.8	220	5.1	100	3.6	4.8	2.8
16	250	13.3	220	5.2	100	3.2	4.6	2.8
17	240	13.2	220	---	100	2.3	4.1	2.9
18	250	13.0					4.4	2.9
19	250	12.5					3.5	3.0
20	230	12.0					2.9	3.0
21	230	11.0					2.7	2.9
22	250	10.6						2.9
23	240	10.6						3.1

Time: 60.0°W.
Sweep: 1.5 Mc to 18.0 Mc, manual operation.

Table 11

Huancayo, Peru (12.0°S, 75.3°W) October 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	11.2						3.8
01	240	9.4						2.8
02	250	8.6						2.9
03	240	8.2						3.9
04	240	6.4						3.0
05	240	4.9				---		3.0
06	260	8.6				2.2		3.1
07	245	11.8				3.0		3.0
08	230	13.3				3.5	10.4	2.8
09	270	14.4	220	5.5		3.8	12.0	3.5
10	270	14.3	220	5.5		4.0	12.0	2.2
11	(275)	13.2	210	5.4		4.1	11.2	2.2
12	---	13.1	210	---		4.2	11.6	2.2
13	---	12.2	210	---		4.0	11.7	3.2
14	---	12.2	210	---		3.9	11.7	2.1
15	220	12.3				3.6	11.7	2.2
16	240	12.2				3.2	10.8	2.1
17	270	12.4				2.4	7.4	3.2
18	320	12.0				1.2		2.2
19	420	11.2						2.0
20	400	12.0						2.2
21	320	11.7						2.4
22	300	11.7						2.6
23	260	11.6						2.7

Time: 75.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 12

Lindau/Harz, Germany (51.6°N, 10.1°E) September 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	5.4					2.8	
01	300	5.0					2.8	
02	300	4.8					2.0	
03	300	4.5					2.2	
04	300	4.5					2.3	
05	290	4.1					2.2	
06	260	5.1			110	1.5	2.1	
07	240	6.3	240	3.7	110	2.3		
08	230	7.2	230	4.2	100	2.8	3.4	
09	250	8.4	230	4.5	100	3.0	4.4	
10	250	8.7	220	4.7	100	3.2	4.5	
11	280	8.9	210	4.8	100	3.3	4.5	
12	270	9.1	200	4.9	100	3.4	4.7	
13	280	9.2	210	4.8	100	3.3	4.8	
14	250	9.0	230	5.1	100	3.3	4.8	
15	240	9.1	230	4.8	100	3.2	4.2	
16	250	8.9	230	4.6	100	2.9	3.2	
17	250	9.1			100	2.5	3.4	
18	250	9.3			100	2.0	3.2	
19	240	9.0					3.0	
20	240	8.2					3.1	
21	250	7.0					3.2	
22	260	6.2					3.1	
23	290	5.7					2.4	

Time: 15.0°E.
Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 13

Palmyra I. (5.9°N, 162.1°W) September 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	>13.0					2.0	(2.9)
01	240	11.7						3.0
02	235	10.2						3.0
03	240	8.9					1.7	3.0
04	250	7.0					2.0	3.0
05	250	5.7					2.0	3.0
06	290	5.5			140	1.4		2.8
07	260	8.3			120	2.6		2.8
08	250	10.0			120	3.3		2.5
09	250	10.8	---	---	120	3.7		2.4
10	270	11.5	220	---	120	---		2.3
11	300	12.2	---	---	120	---		2.3
12	300	12.7	---	---	120	---		2.3
13	300	13.2	---	---	120	---		2.3
14	325	13.5	250	---	120	---		2.4
15	325	13.8	240	---	120	3.8		2.3
16	250	13.4	240	---	120	3.5		2.4
17	250	13.4	250	---	120	3.0		2.3
18	280	12.8			115	2.1	2.6	2.3
19	360	11.6					2.6	2.2
20	380	10.6						(2.2)
21	305	11.7					1.8	2.4
22	270	13.2					2.1	2.6
23	260	13.2					2.0	(2.7)

Time: 157.5°W.
Sweep: 1.0 Mc to 13.0 Mc in 1 minute 36 seconds, automatic operation; 13.0 Mc to 18.0 Mc, manual operation.

Table 14

Huancayo, Peru (12.0°S, 75.3°W) September 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	9.4						2.9
01	240	8.2						3.0
02	230	7.4						3.0
03	240	6.4						3.0
04	240	5.8						3.0
05	240	5.6						3.1
06	280	7.3				1.9	3.0	3.0
07	245	10.0				2.8		3.0
08	230	12.0				3.4	10.7	2.7
09	290	12.7	220	5.5		3.8	11.4	2.5
10	290	12.0	220	5.5		4.0	11.8	2.4
11	(280)	12.0	210	5.4		4.1	12.2	2.2
12	280	12.0	210	5.4		4.2	12.2	2.2
13	280	11.8	210	5.3		4.1	12.2	2.2
14	---	11.6	210	---		3.9	12.2	2.2
15	220	11.5				3.7	11.9	2.2
16	240	11.4				3.2	10.8	2.2
17	260	11.4				2.5	5.6	2.2
18	320	10.6				1.2		2.2
19	425	9.1						2.1
20	410	8.9						2.2
21	310	9.0						2.5
22	250	8.8						2.7
23	230	8.7						2.9

Time: 75.0°W.
Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 15

Wakkanai, Japan (45.4°N, 141.7°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.2					3.4	2.6
01	300	6.1					3.6	2.6
02	300	6.2					3.0	2.7
03	300	5.9					3.3	2.7
04	300	5.6					3.2	2.7
05	285	5.8	---	---	100	2.0	3.2	2.9
06	285	6.3	230	---	100	2.5	3.8	2.9
07	280	6.8	220	4.4	100	2.9	4.5	3.1
08	300	7.2	240	4.5	100	3.3	4.9	3.1
09	300	7.3	230	4.7	100	---	6.0	3.0
10	300	6.9	220	5.0	100	---	5.5	(3.0)
11	310	6.8	220	5.0	100	3.6	5.0	2.8
12	310	7.0	210	5.0	100	3.7	4.8	2.9
13	315	7.2	200	4.8	100	---	4.9	(3.0)
14	310	7.0	220	4.8	100	3.6	4.0	(3.0)
15	315	6.8	240	4.8	100	3.4	4.1	3.0
16	300	7.2	230	4.5	100	3.2	4.2	3.0
17	295	6.9	240	---	100	2.7	5.8	3.1
18	280	6.7	250	---	100	2.0	3.7	(3.0)
19	270	7.0	---	---	---	---	3.6	(2.9)
20	290	6.9					5.6	2.8
21	295	6.8					5.0	2.8
22	285	6.5					4.0	2.8
23	300	6.4					3.8	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 16

Fukaura, Japan (40.6°N, 139.9°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8					3.1	2.7
01	290	6.4					3.2	2.7
02	300	6.5					3.0	2.7
03	290	6.5					2.4	2.7
04	300	6.2					2.9	2.8
05	285	6.2	250	---	---	E	3.0	2.8
06	260	7.2	230	---	110	2.4	3.4	3.0
07	270	8.2	230	---	110	3.0	4.2	3.0
08	290	8.1	230	4.6	110	3.2	4.4	3.0
09	300	7.9	215	5.2	110	---	5.8	2.9
10	330	7.9	200	---	---	---	5.6	2.9
11	330	8.0	---	5.2	110	---	5.7	2.8
12	330	8.4	270	(5.4)	---	---	5.1	2.8
13	330	8.5	240	5.3	---	---	5.2	2.8
14	320	8.5	225	5.1	110	---	5.4	2.9
15	310	8.4	220	5.0	110	---	5.0	2.9
16	300	8.3	245	4.6	110	3.3	5.0	2.9
17	290	8.3	250	---	120	2.8	4.8	3.0
18	280	8.0	255	---	110	2.2	4.2	3.0
19	270	8.0	---	---	---	E	3.5	3.0
20	265	7.4					3.6	2.8
21	280	7.2					4.2	2.7
22	290	7.0					4.8	2.7
23	300	7.0					3.5	2.7

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 17

Shibata, Japan (37.9°N, 139.3°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	6.8					3.8	2.9
01	280	6.4					3.5	2.9
02	270	6.4					3.2	2.9
03	255	5.9					3.0	2.9
04	260	5.8					3.1	2.9
05	270	6.0	245	---	---	1.7	3.2	3.0
06	230	7.2	220	---	100	2.3	4.1	3.1
07	240	7.9	220	---	100	3.0	4.6	3.2
08	260	8.2	210	4.6	100	3.3	5.6	3.2
09	300	8.3	200	4.9	100	3.5	5.9	3.0
10	300	8.1	200	5.2	100	3.5	5.8	3.0
11	300	8.2	200	5.2	100	3.8	5.4	2.9
12	300	8.6	200	5.2	100	---	5.9	2.9
13	305	9.0	200	5.2	100	3.7	5.8	2.9
14	300	9.2	200	5.2	100	3.6	5.6	3.0
15	300	8.9	210	5.0	100	3.5	4.9	3.0
16	275	8.7	220	4.5	100	3.3	5.4	3.1
17	260	8.4	220	---	100	2.9	4.7	3.2
18	240	8.6	230	---	100	2.1	3.9	3.1
19	230	7.6	---	---	---	---	3.8	3.1
20	240	7.2					3.9	3.0
21	270	7.1					3.9	2.9
22	280	7.0					3.6	2.9
23	280	6.6					4.3	2.9

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 18

Tokyo, Japan (35.7°N, 139.5°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	6.9					3.9	3.0
01	260	6.8					3.6	2.9
02	260	6.7					3.2	2.9
03	250	6.5					3.2	3.0
04	250	5.8					2.9	3.0
05	250	6.2	---	---	100	1.8	3.0	3.1
06	230	7.1	215	---	100	2.5	3.7	3.2
07	230	8.3	220	---	100	2.9	4.6	3.3
08	240	8.4	200	4.9	100	3.5	4.7	3.3
09	250	8.4	200	5.1	100	3.6	6.2	3.0
10	290	9.2	200	5.4	100	---	6.0	3.0
11	300	9.2	190	5.3	100	3.9	6.0	3.0
12	300	9.7	190	5.4	100	---	5.8	3.0
13	290	10.0	200	5.2	100	3.9	5.6	3.0
14	290	9.8	210	5.2	100	3.7	5.2	3.0
15	280	9.6	210	5.0	100	3.5	5.8	3.1
16	260	9.1	215	4.9	100	3.4	5.4	3.2
17	250	8.8	210	4.4	100	2.9	4.6	3.2
18	230	8.7	210	---	100	2.2	4.1	3.3
19	220	8.1	---	---	---	---	4.2	3.2
20	240	7.5					3.5	2.9
21	260	7.0					4.0	3.0
22	260	7.4					4.6	3.0
23	270	6.8					4.2	2.9

Time: 135.0°E.
Sweep: 1.0 Mc to 17.0 Mc in 15 minutes, manual operation.

Table 19

Yamakawa, Japan (31.2°N, 130.6°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.1					3.0	2.7
01	245	7.3					3.2	2.7
02	260	7.0					2.8	2.8
03	270	6.8					2.5	2.8
04	260	6.2					2.6	2.9
05	275	5.9	---	---			3.1	2.8
06	265	6.6	250	---	---	2.0	2.8	3.0
07	250	8.2	225	---	110	2.7	3.6	3.2
08	250	8.2	220	---	100	3.2	4.4	3.2
09	290	8.2	220	4.7	110	3.4	4.6	3.0
10	300	8.5	215	5.2	110	(3.7)	5.0	2.9
11	230	9.2	210	5.6	---	---	5.0	2.8
12	360	10.1	220	5.7	100	---	5.4	2.7
13	350	10.6	225	5.6	100	---	5.1	2.8
14	340	10.6	220	5.4	110	---	5.0	2.8
15	370	10.8	230	5.4	100	---	4.8	2.8
16	310	10.7	240	5.2	110	3.6	4.8	2.8
17	300	10.4	245	5.0	100	3.2	5.1	3.0
18	270	9.8	230	---	100	2.5	4.4	3.0
19	260	9.4	---	---	---	---	4.0	3.0
20	260	8.2					4.2	2.9
21	280	8.0					4.4	2.8
22	280	7.4					3.8	2.8
23	300	7.2					3.8	2.8

Time: 135.0°E.
Sweep: 1.2 Mc to 18.5 Mc in 15 minutes, manual operation.

Table 20

Chungking, China (29.4°N, 106.8°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	260	9.6					3.2	2.5
01	260	8.6					3.2	2.6
02	230	7.9					2.6	2.7
03	240	7.2						2.7
04	240	6.4						2.7
05	260	5.4					2.8	2.7
06	240	7.2	---	---	---	---	3.6	3.0
07	240	8.4	220	---	---	---	4.2	3.2
08	260	9.0	220	---	---	---	5.4	3.0
09	300	8.7	210	5.4	---	---	5.4	2.7
10	320	9.6	210	5.4	---	---	5.5	2.5
11	360	11.0	200	5.8	---	---	6.0	2.5
12	340	12.2	200	5.7	90	4.4	6.2	2.6
13	330	13.3	200	5.5	90	4.4	6.6	2.7
14	330	14.2	200	5.4	---	---	5.9	2.7
15	300	14.4	200	5.2	---	---	6.2	2.8
16	280	14.0	200	4.9	80	3.4	5.4	2.8
17	270	13.0	230	---	85	3.2	5.0	2.8
18	240	12.4	215	---			4.2	2.8
19	220	11.8					3.9	2.8
20	220	9.9					4.2	2.7
21	270	9.3					3.8	2.6
22	280	8.8					4.2	2.5
23	260	8.8					4.3	2.5

Time: 105.0°E.
Sweep: 1.5 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 21

Capetown, Union of S. Africa (34.2°S, 18.3°E) August 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	---	2.8						2.8
01	(260)	3.0						2.8
02	---	3.1						2.9
03	---	3.1						2.9
04	(240)	3.2						3.0
05	(250)	3.1						3.0
06	(240)	3.2						3.0
07	(2[illegible]0)	3.0						3.0
08	230	(6.1)			---	2.1		3.3
09	240	(8.0)	220	---	---	2.7		(3.3)
10	250	(9.2)	210	---	110	---		(3.2)
11	260	9.3	200	---	110	---		3.1
12	270	9.4	---	---	110	---		3.0
13	270	9.6	---	---	110	---		3.0
14	280	9.9	---	---	110	---		2.9
15	280	(10.2)	---	---	110	---	3.5	(3.0)
16	260	10.4	220	---	(110)	(3.0)		3.0
17	240	10.2	---	---	---	2.5		3.1
18	230	9.4			---	(1.7)		3.2
19	210	6.8						(3.2)
20	220	5.6						3.2
21	220	4.0						3.2
22	(220)	3.0						3.1
23	(240)	2.8						2.9

Time: 30.0°E.
Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 22

Chungking, China (29.4°N, 106.8°E) July 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.1					5.1	2.7
01	240	8.4					5.3	2.7
02	220	8.0					4.5	2.7
03	220	7.0					3.8	2.8
04	260	6.8					4.0	2.7
05	260	6.4					3.6	2.7
06	240	7.8					4.8	2.9
07	250	8.6	220	---			6.1	2.9
08	285	8.6	220	---	---	---	7.4	2.8
09	305	8.8	210	5.4	---	---	8.6	2.7
10	320	9.6	195	5.4	---	---	8.9	2.6
11	350	10.4	200	5.7	---	---	8.2	2.6
12	360	11.3	195	5.4	90	4.3	7.8	2.5
13	350	12.0	200	5.6	---	---	6.8	2.6
14	350	12.5	200	5.4	---	---	6.3	2.6
15	290	14.0	200	5.3	80	4.0	6.4	2.8
16	280	13.6	200	5.0	80	3.5	6.4	2.9
17	280	12.0	200	4.6	80	3.1	5.4	2.9
18	260	12.4	230	---			5.6	2.8
19	220	12.0	---	---			5.0	2.8
20	250	10.2					4.5	2.7
21	260	9.2					3.8	2.6
22	280	9.0					4.1	2.6
23	280	9.0					4.5	2.6

Time: 105.0°E.
Sweep: 1.5 Mc to 20.0 Mc in 15 minutes, manual operation.

Table 23

Delhi, India (28.6°N, 77.1°E) July 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	415	8.2						2.5
01	430	8.0						
02	---	---						
03								
04								2.6
05	380	7.4						
06	360	7.7						
07	360	9.6						
08	400	8.6						2.7
09	400	9.5						
10	440	9.8						
11	450	10.8						
12	440	11.3						2.5
13	(440)	(11.5)						
14	440	(12.0)						
15	(420)	(12.0)						
16	(410)	(11.6)						2.5
17	(410)	(11.5)						
18	400	(11.1)						
19	400	(10.6)						
20	400	(9.6)						2.5
21	400	9.0						
22	400	8.6						2.3
23	420	8.3						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 24

Bombay, India (19.0°N, 73.0°E) July 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	390	7.9						
08								
09	480	9.7						
10	510	10.4						
11	600	11.6						
12	(600)	(12.2)						2.4
13								
14	---	(13.2)						
15	---	(13.5)						
16	---	(13.4)						2.3
17	---	(13.5)						
18	600	(12.9)						
19	585	11.4						
20	540	10.8						2.7
21	525	10.1						
22	510	9.2						2.0
23	(390)	8.2						

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values; other columns, median values.

Table 25

Madras, India (13.0°N, 80.2°E) July 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	360	7.6						
08	420	9.0						2.7
09	480	9.5						
10	480	9.8						
11	480	9.8						
12	540	9.8						2.4
13	540	9.7						
14	540	10.0						
15	540	10.4						
16	540	10.8						2.2
17	540	11.0						
18	540	10.9						
19	540	10.8						
20	480	10.0						2.4
21	480	(9.2)						
22	480	(9.0)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.
**Average values: other columns, median values.

Table 26

Tiruchirapalli, India (12.8°N, 78.8°E) July 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	360	7.0						
07	360	8.0						
08	420	9.5						
09	470	9.7						
10	480	9.8						
11	510	9.5						
12	540	9.7						
13	570	9.8						
14	540	9.5						
15	495	9.9						
16	500	10.2						
17	510	10.8						
18	480	11.0						
19	480	10.5						
20	480	9.5						
21	480	9.6						
22	620	(9.3)						
23								

Time: Local.
Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.
*Height at 0.83 foF2.

Table 27

Fribourg, Germany (48.1°N, 7.8°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.4					2.2	2.7
01	290	7.1					2.1	2.6
02	295	6.7						2.7
03	290	6.6					1.8	2.7
04	295	6.5	302	---				2.8
05	300	7.0	260	3.6	120	2.1	3.2	2.8
06	315	7.3	250	4.1	110	2.6	4.0	2.8
07	342	7.8	240	4.6	107	3.0	4.5	3.0
08	340	7.8	225	4.9	105	3.3	4.8	2.8
09	332	7.9	215	5.3	103	3.5	5.2	2.8
10	350	7.7	225	5.4	105	3.6	5.4	2.7
11	355	8.0	230	5.5	103	3.7	4.5	2.8
12	370	7.8	210	5.4	103	3.7	4.9	2.7
13	360	8.0	220	5.4	105	3.8	5.0	2.8
14	375	7.6	225	5.4	105	3.7	4.4	2.8
15	355	7.6	225	5.2	107	3.5	5.2	2.8
16	345	7.6	230	5.0	109	3.4	4.2	2.8
17	345	7.5	250	4.8	109	3.1	4.6	2.8
18	315	8.0	250	4.2	113	2.6	4.8	(2.9)
19	275	8.0	---	---	121	2.1	4.5	2.8
20	270	8.3					3.6	2.9
21	260	8.3					3.2	(2.8)
22	270	7.8					2.7	2.8
23	278	7.7					2.3	2.7

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 28

Lanchow, China (36.1°N, 103.8°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	8.0					3.9	2.3
01	380	7.9					4.0	2.3
02	380	7.7					4.2	2.3
03	360	7.7					4.1	2.4
04	360	7.8					4.1	2.2
05	360	7.6					3.9	2.3
06	340	8.2					4.5	2.4
07	360	9.8	320	---	150	3.2	4.9	2.4
08	380	10.0	320	---	---	---	4.5	2.4
09	400	11.0	340	---	150	3.6	5.0	2.4
10	380	11.0	350	---	---	---	4.8	2.4
11	400	11.5	330	---	---	---	5.0	2.3
12	400	12.0	350	---	---	---	5.0	2.3
13	400	12.0	340	---	---	---	5.0	2.4
14	400	12.0	340	---	---	---	4.8	2.4
15	400	11.5	320	---	---	---	4.8	2.4
16	400	11.5	320	---	---	---	4.8	2.4
17	400	11.0	300	---	160	3.6	5.0	2.4
18	400	10.5	320	---	150	3.1	5.0	2.4
19	320	10.2					4.6	2.5
20	300	9.5					4.5	2.4
21	(320)	(8.4)					(4.3)	(2.4)
22	340	8.4					4.2	2.3
23	360	8.0					4.0	2.4

Time: 105.0°E.
Sweep: 2.4 Mc to 16.0 Mc in 15 minutes, manual operation.

Table 29

Calcutta, India (22.6°N, 88.4°E) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	8.8				1.2	(3.0)	(2.9)
01		7.9				1.3		
02		7.6				1.1	(3.0)	
03	---	7.4				1.0		---
04		7.2				1.0		
05		7.8				1.2	(4.0)	
06	240	8.0				2.3	(3.2)	(2.9)
07		9.7				3.0	(4.5)	
08		10.4				3.6	5.0	
09	300	10.7				4.0	5.6	2.7
10		11.1				4.2	5.0	
11		11.8				4.1		
12	---	12.6				---		---
13		12.6				---		
14		12.6				---		
15	---	12.6				---		---
16		12.6				3.9		
17		12.6				3.4	(4.8)	
18	300	12.5				3.1	(4.9)	(2.7)
19	270	12.9				3.0	(4.5)	
20		11.9				2.0	4.1	
21		9.9				1.8	(3.8)	2.8
22		9.2				1.5	(3.6)	
23		8.8				1.3	(3.1)	

Time: Local.

Table 30

Dakar, French West Africa (14.6°N, 17.4°W) June 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(380)	(5.0)					3.0	
01	370	(4.4)					4.2	
02	(340)	(4.6)					3.8	
03	(360)	(4.4)						
04	(360)	(4.2)						
05	(325)	(4.2)						
06	(260)	6.9					4.6	
07	(250)	8.2			---	---	5.4	
08	(250)	8.6	---	---	120	---	8.7	
09	---	9.0	---	---	---	3.9	8.2	
10	---	10.3	---	5.3	---	4.1	6.4	
11	(390)	11.2	230	5.6	118	4.2	4.3	
12	(410)	12.0	225	5.8	110	4.2	5.8	
13	(425)	13.1	240	5.9	110	4.2		
14	(405)	13.4	222	5.4	110	4.0	6.4	
15	(390)	(13.6)	245	5.3	---	---	5.4	
16	(350)	(13.7)	240	---	120	---	4.4	
17	(310)	13.2	240	---	120	---	4.8	
18	(285)	(12.2)	---	---	125	---	4.3	
19	---	(10.4)					5.3	
20	(400)	8.6					4.8	
21	(430)	7.8					5.2	
22	(410)	(6.8)					5.3	
23	(400)	(5.8)					4.1	

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 31

Fribourg, Germany (48.1°N, 7.8°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.4						2.6
01	300	7.2					1.9	2.6
02	300	7.0						2.7
03	300	6.5						2.6
04	290	6.4						2.7
05	260	7.0	258	---	128	1.9	2.0	2.9
06	272	7.5	240	4.2	109	2.5	3.3	2.9
07	295	8.0	232	4.7	106	2.9	3.7	2.9
08	320	8.2	225	5.2	105	3.3	4.2	2.9
09	320	8.4	220	5.2	108	3.5	4.4	2.9
10	350	8.8	220	6.4	106	3.6	4.6	2.8
11	350	9.0	216	6.7	105	3.7	5.1	2.8
12	348	9.3	220	6.7	107	3.8	4.6	2.8
13	340	9.3	220	6.8	108	3.6	4.7	2.8
14	340	9.2	226	6.6	109	3.7	4.0	2.8
15	340	9.0	230	6.4	110	3.6	3.9	2.8
16	325	8.8	240	5.1	109	3.3	4.7	(2.8)
17	298	(9.0)	240	(4.7)	111	3.0	3.6	2.9
18	266	(9.2)	245	---	111	2.4	3.8	(2.9)
19	260	(9.0)	---	---	123	---	3.2	(2.9)
20	260	(8.8)					3.2	(2.9)
21	260	8.4					2.2	(2.8)
22	272	7.8					2.6	(2.8)
23	280	7.6					2.2	(2.6)

Time: Local.
Sweep: 1.6 Mc to 17.6 Mc in 10 minutes, automatic operation.

Table 32

Calcutta, India (22.8°N, 88.4°E) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(225)	10.5				1.1		3.0
01		10.0				1.1		
02		8.8				1.0		
03	(240)	(8.2)				1.0		(3.0)
04		(8.3)				1.0		
05		(9.0)				1.1		
06	---	---				---		---
07		(10.8)				3.4		
08		10.8				3.3		
09	(270)	11.6				3.6		(2.7)
10		12.3				3.8		
11		12.5				3.5		
12	---	12.8				---		(2.6)
13		12.6				---		
14		12.7				---		
15	---	12.8				---		---
16		12.				4.0		
17		12.6				3.3		
18	255	12.8				2.8		2.6
19		12.7				2.3		
20		(12.6)				1.4		
21	255	12.6				1.3		2.8
22		12.2				1.3		
23		11.0				1.2		

Time: Local.

Table 33

Dakar, French West Africa (14.6°N, 17.4°W) May 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00		7.8					4.4	
01		7.7					4.0	
02		7.4						
03		7.2						
04		7.0						
05		6.2						
06		7.6				---	4.7	
07		9.0				---	6.4	
08		9.7				3.4	8.6	
09		10.8				3.8	6.7	
10		11.7		(5.5)		4.1	6.6	
11		13.2		(5.6)		4.2	6.4	
12		(13.7)		(5.7)		4.3	5.8	
13		(13.7)		(5.6)		4.2		
14		(14.2)		(5.3)		4.0	4.9	
15		(13.7)		(5.7)		3.7	6.0	
16		(13.8)		---		---	5.8	
17		(13.7)				---	6.0	
18		(13.7)				---	4.9	
19		(11.7)					4.2	
20		(10.3)					3.7	
21		(8.9)					4.8	
22		(8.3)						
23		(8.2)					4.6	

Time: Local.
Sweep: 1.25 Mc to 20.0 Mc in 10 minutes, automatic operation.

Table 34

Fribourg, Germany (48.1°N, 7.8°E) April 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	7.7						2.6
01	292	7.3						2.6
02	300	7.1						2.6
03	300	8.8						2.6
04	300	6.4						2.6
05	265	6.8			---	---		2.6
06	240	7.3	---	---	120	2.0		3.0
07	235	(8.2)	235	---	110	2.6		(3.1)
08	228	9.4	225	6.0	105	3.1		(3.0)
09	238	10.0	220	(6.4)	104	3.4	3.6	2.9
10	260	10.6	220	---	104	3.6	4.0	2.8
11	290	11.0	220	6.0	106	3.7	4.1	2.8
12	308	11.4	210	6.2	108	3.7	3.9	2.8
13	326	11.6	220	6.0	109	3.6		2.8
14	320	11.4	226	6.0	109	3.6		2.8
15	250	11.4	226	6.0	108	3.6		2.8
16	240	11.1	230	---	106	3.2		2.8
17	240	11.0	---	---	110	2.7		(2.9)
18	246	11.0	---	---	122	2.0	2.2	2.9
19	246	(10.4)					2.0	(3.0)
20	240	(9.2)						(2.9)
21	250	(8.5)						(2.8)
22	260	8.1						2.7
23	280	7.8						(2.7)

Time: Local.
Sweep: 1.6 Mc to 17.8 Mc in 10 minutes, automatic operation.

TABLE 35

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

h'F2 (Characteristic), Km (Unit), November (Month), 1949

Observed at Washington, D. C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	260	270	250	250	270	270	280	240	230	230 K	220 K	[330] LK	310 K	240 K	280 K	280 K	300 K	260 K	270 K	280 K	[290] CK	300	S	A
2	A	C	C	C	C	C	C	C	270	220	[220] C	230	220	220	220	210	230	220	[220] S	230	[310] S	310	290	240
3	260	250	270	280	290	280	290	220	220	210	210	210	210	220	220	230	210	210	220	210	210	[230] A	(250) A	240
4	260	250	270	270	260	[280] A	290	300	220	220	220	210	220	210	220	220	220	210	220	230	210	270	260	230
5	270	270	280	290	300	310	290	250	220	230	240	250	210	220	230	230	230	220	220	240	230	250	230	230
6	260	260	240	230	270	260	240	230	220	220	220	220	230	220	230	230	230	220	200	220	220	240	230	240
7	260	270	270	260	230	230	240	230	230	220	230	220	230	220	280	230	230	220	210	210	240	230	230	250
8	260	250	250	260	250	240	230	230	230	220	220	220	210	220	220	230	230	210	210	210	230	230	260	250
9	260	270	280	280	300	300	290	230	220	220	230	220	250	220	230	230	230	220	230	220	240	240	230	250
10	260	270	250	230	250	290	280	250	230	230	230	240	210	220	220	230	220	210	230	220	240	230	260	280
11	290	330	300	290	260	220	240	250	230	220	230	230	230	240	220	220	230	210	220	210	220	230	240	230
12	230	260	280	280	270	240	270	230	230	220	220	230	210	230	230	230	220	210	210	210	240	310	310	300
13	290	270	260	240	240	270	250	260	220	(220) A	220	210	220	230	220	220	210	210	220	210	220	220	240	240
14	270	260	260	270	270	280	280	260	230	210	[210] M	210	210	230	220	220	220	[220] A	210	210	230	(230) A	250	240
15	260	280	280	270	230	240	260	230	210	230	230	230	270	240	240	230	230	220	240	220	230	260	300	290
16	290	280	260	260	230	280	240	230	210	C	C	210	220	230	230	220	220	220	230	220	240	250	[260] A	260
17	260	270	260	250	250	240	250	230	230	220	230	220	220	220	230	220	210	210	210	230	240	270	250	260
18	270	260	270	280	250	(280) S	250	230	230	230	230	230	220	230	240	230	220	220	230	230	250	240	250	250
19	260	260	260	270	270	270	260	270	240	240	220	230	230	250	240	230	240	230	230	210	250	310	280	230
20	230	300	320	350	310	300	240	240	220	230	250	230	220	230	220	220	210	200	230	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	210	210	250 H	220	230	230	230	220	200	260	200	210	280	240	270
22	240	240	240	250	250	260	260	(240) A	220	230	220	230	220	220	[220] C	230	210	210	220	210	210	230	[220] C	220
23	260	250	[260] A	280	270	270	250	220	220	220	220	240	[240] C	[230] C	230	230	[210] C	220	230	230	210	240	260	250
24	280	300	300	270	260	240	(230) S	230	220	220	(230) S	220	218	(230) S	(230) S	220	230	220	250	210	(230) S	(230) S	(240) S	240
25	270	240	[260] S	270	250	250	270	(220) S	210	220	210	230	210	[220] M	220	230	220	210	220	210	220	220	240	270
26	270	260	250	240	230	[240] S	250	230	210	220	220	220	280	220	220	220	220	[210] S	210	[210] S	250	250	300	300
27	300	280	260	230	260	290	280	230	210	220	210	230	220	230	230	220	230	210	230	230	230	240	240	230
28	230	260	290	290	300	260	240	230	220	230	220	220	210	230	230	220	220	210	230	230	250	300	330	310
29	280	270	260	270	290	310	300	280	250	240	230	240	220	230	250	260	230	240	220 K	250 K	270 K	270 K	280 K	260 K
30	270 K	250 K	300 K	270 K	350 K	320 K	300	260	250	230	230	230	230	[220] C	230	220	230	210	200	230	230 K	240 K	260 K	260 K
31																								
Median	260	265	260	270	260	270	260	230	220	220	220	230	220	230	230	230	220	210	220	220	230	240	250	250
Count	28	28	28	28	28	28	28	28	29	29	29	30	30	30	30	30	30	30	30	29	29	29	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 36

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D C

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), November (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	5.4^{F}	5.3^{F}	5.0^{F}	4.8	4.5	4.2	4.5	7.3	9.0	10.6^{K}	9.2^{K}	9.6$^{F}_{K}$	10.5$^{F}_{K}$	10.6$^{F}_{K}$	^{K}(10.1)$^{J}_{S}$	9.2^{K}	8.5^{K}	8.1^{K}	(7.5)$^{J}_{K}$	6.9^{K}	^{K}(6.0)$^{J}_{S}$	(5.8)^{S}	S	A
2	6.2	C	C	C	C	C	C	C	10.0	10.2	[11.3]^{C}	13.0	(14.1)^{S}	(14.4)^{S}	13.5	[13.2]^{S}	12.6	(12.5)$^{S}_{P}$	[10.5]^{S}	(8.5)^{S}	[6.8]^{S}	6.4^{F}	6.7^{F}	(6.9)$^{S}_{F}$
3	(5.7)$^{S}_{F}$	(5.5)^{F}	4.8^{F}	5.4^{F}	5.5	5.3	5.0	8.1	11.0	12.4	12.8	13.4	13.4	(13.3)^{S}	13.0	13.0	12.1	11.1	(10.8)$^{J}_{S}$	9.4	7.2	6.5	6.1	(5.7)$^{J}_{S}$
4	(5.4)$^{J}_{S}$	(5.0)$^{J}_{S}$	(5.0)$^{J}_{S}$	(4.7)$^{J}_{S}$	(4.5)$^{J}_{S}$	(3.7)$^{J}_{S}$	(4.0)$^{J}_{S}$	7.4	10.0	12.1	12.6	13.0	13.1	13.0	13.0	12.6	12.4	11.3	9.7	(9.0)$^{J}_{S}$	7.1	(6.7)$^{J}_{S}$	6.9	6.1
5	(6.2)$^{J}_{S}$	(5.9)$^{J}_{S}$	(5.5)$^{J}_{S}$	(5.0)$^{J}_{S}$	4.9	4.8	5.2	7.1	9.5	10.4	11.8	12.8	13.1	13.6	13.8	13.2	12.8	11.1	10.5	(9.0)$^{J}_{S}$	8.0	(7.8)^{S}	(6.8)$^{S}_{P}$	6.5
6	6.5	6.5	6.6	5.7	(4.7)^{S}	4.6	4.6	7.5	10.5	12.6	11.9	13.2	13.7	13.3	13.1	13.1	12.3	11.5	(10.1)^{S}	8.8	(8.1)$^{J}_{S}$	6.9	(5.8)$^{J}_{S}$	5.6
7	(5.5)^{S}	5.3	5.2	5.0	4.9	(4.1)$^{J}_{S}$	3.8	7.4	10.4	11.8	12.0	13.0	13.1	13.0	12.9	12.8	12.4	11.5	10.7	8.9	8.2	(7.4)$^{S}_{P}$	6.4	(6.0)$^{J}_{S}$
8	5.7	5.7	5.7	(5.4)$^{J}_{S}$	5.2	4.9	4.8	7.9	11.2	12.5	13.0	13.4	13.8	13.4	13.2	13.2	13.0	12.0	10.3	8.5	8.1	7.4	6.8	6.3
9	5.9	5.8	6.0	5.3	4.9	4.9	5.5	8.1	10.6	12.3	13.4	13.2	13.2	13.6	13.4	13.1	12.8	12.7	11.6	9.3	8.4	7.9	(7.5)$^{J}_{S}$	7.0
10	(6.8)$^{J}_{S}$	(6.7)$^{J}_{S}$	6.6	5.8	(4.7)^{S}	(4.7)$^{J}_{S}$	5.2	(8.3)$^{J}_{S}$	11.3	13.2	13.3	13.3	(14.0)^{S}	13.9	14.0	13.8	13.5	(11.6)$^{S}_{P}$	(10.9)$^{J}_{S}$	9.6	8.8	(8.0)^{S}	(7.1)$^{J}_{S}$	7.0
11	6.0	(6.0)^{S}	(5.9)$^{S}_{P}$	6.8	(6.4)^{S}	(5.8)$^{J}_{S}$	(5.5)$^{J}_{S}$	7.5	11.0	12.4	13.3	14.2	(14.1)^{S}	14.0	14.1	14.1	13.5	12.6	10.8	9.0	7.7	7.0	6.8	6.5
12	(5.8)$^{J}_{S}$	5.5	(5.2)$^{J}_{S}$	5.2	5.0	4.6	(4.3)$^{J}_{S}$	(7.2)^{S}	10.7	11.9	13.8	13.1	14.0	13.8	13.9	13.5	13.7	12.6	11.1	(8.9)$^{J}_{S}$	[6.1]^{S}	(4.3)^{S}	[5.1]^{S}	(5.1)$^{J}_{S}$
13	5.5	5.7	(5.9)$^{J}_{S}$	(5.5)$^{J}_{S}$	5.2	(4.4)^{S}	4.2	7.2	10.2	11.9	13.4	14.2	(14.1)^{S}	14.4	14.2	13.7	13.0	11.8	10.4	9.5	7.9	(6.6)^{S}	(6.6)$^{S}_{P}$	(6.1)$^{J}_{S}$
14	(5.7)$^{J}_{S}$	(5.5)$^{J}_{S}$	(5.5)$^{S}_{F}$	(5.1)$^{S}_{F}$	(4.5)$^{S}_{F}$	3.9^{F}	3.6^{F}	6.8	10.4	12.7	[13.6]^{M}	13.9	14.0	14.0	14.0	14.0	12.6	(11.9)$^{J}_{S}$	10.6	8.8	8.7	6.8	6.6	(6.2)$^{J}_{S}$
15	(5.6)$^{S}_{P}$	5.4	(5.4)$^{S}_{P}$	(5.6)$^{S}_{P}$	(5.1)$^{S}_{P}$	(4.4)$^{S}_{P}$	(4.8)^{S}	(7.0)^{S}	10.3	12.0	13.8	13.4	13.3	13.2	13.4	13.8	(13.8)$^{J}_{S}$	13.0	11.9	10.0	7.5	6.8	6.8	6.2
16	6.6	(6.5)^{S}	6.8	6.6	5.7	6.0	6.3	(7.5)$^{S}_{P}$	9.5	C	C	13.1	13.1	12.6	12.4	12.4	11.4	10.4	9.4	7.9	7.3	6.0	5.6	5.2
17	5.0	5.0	4.9	4.8	4.5	3.9	3.7	6.6	9.9	11.1	12.5	12.7	13.0	13.0	12.6	(11.6)$^{S}_{P}$	(11.3)^{S}	(10.4)$^{J}_{S}$	(9.0)$^{S}_{P}$	(7.8)^{S}	7.0	(6.1)$^{S}_{P}$	(6.3)^{S}	6.0
18	6.0	(5.8)$^{J}_{S}$	5.4	(5.6)$^{S}_{P}$	5.0	(4.7)^{S}	4.7	(7.0)^{S}	10.9	12.0	12.3	13.0	13.7	(13.8)^{S}	(13.4)^{P}	(13.1)^{P}	12.6	(11.6)^{J}	(9.9)^{J}	8.0	7.8	7.6	(7.4)^{J}	(7.4)^{F}
19	(7.1)^{J}	6.9	(6.5)$^{J}_{F}$	(5.7)^{F}	(6.0)^{J}	(5.5)^{J}	5.4	7.3	(10.4)^{P}	11.8	12.4	12.9	13.0	12.6	(13.2)^{P}	(13.4)^{P}	(13.5)$^{S}_{P}$	13.2	13.0	9.5	(8.7)^{P}	(7.0)$^{J}_{S}$	(6.0)$^{S}_{P}$	(7.6)$^{J}_{S}$
20	8.0	F	F	6.0^{F}	F	F	(6.1)^{F}	(7.3)^{J}	9.9	12.1	14.3	13.0	(14.2)$^{S}_{P}$	(14.2)$^{J}_{S}$	13.5	13.0	12.4	(10.9)^{J}	9.2	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	10.8	11.5	12.8	13.3	13.1	12.6	(12.3)^{J}	12.5	(11.9)$^{S}_{P}$	11.8	9.5	6.2	(6.8)$^{S}_{P}$	(6.3)$^{S}_{P}$	(6.2)^{S}
22	6.1	(5.7)$^{J}_{S}$	5.0	4.7	(4.2)$^{J}_{S}$	3.8	3.7	(6.1)^{S}	(9.3)^{J}	11.4	11.9	12.8	12.6	12.9	[12.2]^{C}	(12.6)^{S}	(11.7)^{S}	(11.2)$^{S}_{P}$	(9.2)$^{S}_{P}$	8.6	(6.3)$^{S}_{P}$	6.1	(6.0)^{S}	5.2
23	(4.9)$^{J}_{S}$	(4.2)$^{J}_{S}$	4.0	(4.0)$^{J}_{S}$	(3.9)$^{J}_{S}$	(4.0)$^{J}_{S}$	(4.0)$^{J}_{S}$	(7.1)$^{J}_{S}$	9.2	10.4	(10.8)^{J}	(12.2)^{S}	[12.8]^{C}	[12.7]^{C}	(12.2)$^{S}_{P}$	(11.6)$^{S}_{P}$	[10.9]^{C}	(10.6)^{S}	9.4	(8.5)$^{J}_{P}$	(6.6)$^{J}_{S}$	5.9	(6.2)$^{J}_{S}$	(6.0)$^{S}_{P}$
24	(5.7)$^{J}_{S}$	(5.7)$^{J}_{F}$	5.7^{F}	5.7	(5.6)^{S}	(4.7)^{S}	(4.0)$^{S}_{F}$	5.9	9.0	10.8	11.7	12.4	(12.1)$^{S}_{J}$	13.0	(12.4)$^{J}_{S}$	11.1	11.4	(10.3)$^{J}_{S}$	(9.8)^{J}	(7.1)^{J}	(6.5)^{S}	(5.9)$^{S}_{P}$	(4.4)$^{S}_{P}$	(4.4)^{S}
25	4.3	4.2	[4.2]^{S}	(4.2)$^{S}_{F}$	(4.0)$^{S}_{F}$	3.6	(3.2)$^{J}_{S}$	(5.7)^{S}	(9.2)$^{S}_{P}$	10.3	12.0	(12.4)$^{S}_{P}$	13.0	[12.6]^{M}	12.3	12.6	(12.3)$^{S}_{P}$	11.7	(8.8)$^{S}_{P}$	(8.3)$^{S}_{P}$	(7.1)^{J}	(5.4)$^{S}_{P}$	(4.9)$^{S}_{P}$	(4.7)$^{S}_{P}$
26	(5.1)$^{S}_{P}$	(4.8)$^{S}_{F}$	(5.0)$^{J}_{F}$	(4.8)$^{J}_{S}$	(3.7)$^{S}_{F}$	[3.6]$^{S}_{F}$	(3.5)$^{S}_{F}$	5.4^{F}	(8.9)$^{S}_{P}$	(10.5)^{J}	11.8	11.8	12.4	11.6	11.4	11.7	(10.8)$^{S}_{P}$	[10.6]^{S}	(8.6)$^{S}_{P}$	[8.3]^{S}	6.0	5.2	(5.1)$^{J}_{S}$	5.3
27	5.1	(5.0)^{S}	(5.4)$^{S}_{P}$	(4.6)$^{J}_{S}$	(4.0)$^{J}_{S}$	(3.9)$^{J}_{S}$	(4.1)$^{J}_{S}$	5.8	8.9	10.9	11.6	(12.1)$^{S}_{P}$	12.8	12.6	(12.6)$^{S}_{P}$	12.8	12.6	10.7	(10.1)$^{J}_{S}$	(8.2)$^{J}_{S}$	(7.0)$^{J}_{S}$	(6.3)$^{J}_{S}$	5.7	5.5
28	4.6	(3.8)^{S}	(3.8)$^{S}_{F}$	(4.1)^{S}	3.9	3.8	(3.7)^{S}	(5.7)^{S}	(9.5)^{S}	(11.1)^{S}	11.5	11.8	(11.9)^{S}	11.9	12.7	(11.8)$^{S}_{P}$	(11.5)$^{S}_{P}$	10.2	9.3	(7.8)$^{J}_{S}$	(6.1)$^{J}_{S}$	(5.2)$^{J}_{S}$	(5.1)$^{J}_{S}$	(5.5)$^{J}_{S}$
29	5.9	5.5	5.0	4.6^{F}	4.1^{F}	4.2^{F}	4.2^{F}	5.1^{F}	(8.1)$^{S}_{P}$	10.2	11.2	11.7	12.2	12.7	(12.9)$^{J}_{S}$	(12.1)$^{J}_{S}$	11.4	10.6	8.5^{K}	8.2^{K}	7.4^{K}	6.6^{K}	^{K}(6.8)$^{J}_{S}$	^{K}(5.0)$^{J}_{F}$
30	4.8$^{F}_{K}$	4.6$^{F}_{K}$	(3.4)$^{F}_{K}$	(2.9)$^{F}_{K}$	(3.1)$^{F}_{K}$	(3.2)$^{F}_{K}$	3.5^{F}	4.4^{F}	(7.9)^{J}	9.2	(9.9)^{J}	(11.4)^{J}	12.2	[11.8]^{C}	12.0	11.4	11.0	(11.3)$^{S}_{P}$	(9.5)$^{J}_{S}$	9.3	^{K}(6.8)$^{S}_{P}$	^{K}(5.1)$^{J}_{S}$	4.7$^{F}_{K}$	(3.0)$^{F}_{K}$
31																								
Median	5.7	(5.5)	5.4	5.2	(4.7)	4.4	4.2	7.2	10.0	11.8	12.0	13.0	13.1	13.0	13.0	12.9	12.4	11.4	10.1	8.8	7.2	(6.6)	(6.3)	(6.0)
Count	29	27	27	28	27	27	28	28	29	29	29	30	30	30	30	30	30	30	30	29	29	29	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 702510

Form adopted June 1946

TABLE 37

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

IONOSPHERIC DATA

foF2 (Characteristic), Mc (Unit), November (Month), 1949

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	5.3 F	5.2 F	(5.0) S	4.7	(4.4) JS	(4.2) S	(5.4) S	8.1	9.2	9.7 K	8.9 FK	10.2 K	10.6 FK	[10.8] CK	9.6 K	9.1 K	8.3 K	7.6 K	(7.0) SK	K (6.2) JS	(5.7) SK	(5.7) S	(5.6) JS	A
2	C	C	C	C	C	A	C	C	(9.9) JS	10.9	12.9	13.7	14.3	(13.5) S	(13.4) S	(12.9) S	(12.6) S	(11.8) JS	[9.4] S	(7.1) S	(6.0) JS	6.6 F	6.9 F	(5.8) SF
3	(5.1) SF	4.9 F	(5.2) SF	(5.5) S	5.4	4.9	6.4	9.1	11.7	12.3	13.2	13.2	13.7	(13.3) S	(13.2) S	12.9	(11.5) JS	11.0	10.1	8.6	6.5	(6.2) JS	(5.8) JS	5.3
4	(5.2) S	P (5.2) JS	(4.8) JS	(4.7) JS	(4.1) JS	(3.5) S	(5.9) JS	8.5	11.3	12.4	12.8	(13.8) SP	13.1	12.9	12.8	12.8	11.9	10.5	(9.1) JS	8.0	6.6	P (6.8) SJ	P (6.4) JS	(6.1) JS
5	(6.0) JS	5.6	5.5	(5.0) JS	(5.0) S	4.8	5.7	8.2	10.0	11.0	12.3	13.3	13.1	13.7	13.0	12.9	11.9	(10.9) SP	9.0	8.6	7.7	(7.2) SP	6.6	6.6
6	6.6	6.6	6.3	4.9	4.6	4.8	5.8	10.6	11.7	12.4	12.9	13.2	13.5	13.4	13.0	12.8	12.2	10.9	9.6	(8.3) P	6.9	6.4	(6.2) JS	5.7
7	5.3	5.4	(5.3) S	5.0	4.5	3.9	5.5	9.1	10.6	11.8	12.3	13.0	13.1	12.9	12.9	12.5	(12.1) JS	11.0	9.9	8.1	(7.7) JS	6.8	(6.1) JS	5.8
8	(5.7) JS	5.7	5.6	(5.3) JS	5.0	(4.7) JS	5.6	9.7	11.6	12.7	(13.8) JS	13.5	13.4	13.4	(13.3) JS	13.1	12.7	11.2	10.1	8.4	7.8	(7.0) JS	6.8	6.0
9	6.0	5.8	5.9	5.0	4.8	5.0	6.3	10.0	11.4	12.6	13.0	13.2	13.5	13.5	13.2	12.9	12.4	(11.7) JS	10.7	8.8	8.0	7.8	(7.4) JS	(6.8) JS
10	6.7	6.5	(6.8) S	5.5	4.8	(4.8) JS	(6.1) JS	10.0	12.9	13.0	13.3	13.7	13.8	13.9	13.9	(13.8) S	(13.1) SP	(11.3) SP	10.3	8.8	8.1	(7.3) S	(6.9) JS	6.5
11	(6.0) JS	(6.1) JS	(6.2) JS	6.4	6.5	(6.4) JS	(5.8) JS	(9.2) SP	11.9	(13.3) JS	(14.1) S	(14.0) S	13.8	14.0	14.0	13.8	(13.4) S	(11.5) S	9.9	8.5	7.6	7.0	6.6	(6.6) SP
12	(5.5) S	5.4	5.0	5.0	4.9	(4.4) S	(5.4) S	8.7	11.7	12.8	(13.9) JS	(13.4) S	(13.7) S	(13.5) SP	(13.9) S	13.6	13.0	11.7	(10.2) JS	(6.7) S	5.5	(3.8) SP	(5.0) JS	5.2
13	(5.5) S	(5.7) S	(5.8) S	(5.2) JS	4.6	4.1	[6.8] S	9.0	11.0	(13.3) S	14.0	14.0	14.4	14.1	14.0	13.3	12.6	11.1	10.3	(8.6) S	(7.4) S	(6.8) S	(6.3) SP	(6.8) JS
14	(5.6) JS	(5.6) JS	(5.5) SF	4.9	(5.3) SF	(3.6) SF	(5.1) SF	(9.2) JS	11.7	13.3	13.8	13.8	14.0	13.8	14.1	13.2	12.6	11.3	P (9.8) JS	(8.7) JS	(7.4) JS	(6.7) S	6.6	(5.9) JS
15	5.4	(5.2) SP	(5.6) SP	(5.6) SP	4.7	(4.4) S	[5.9] S	(8.8) SP	11.4	13.0	13.4	13.6	13.4	13.4	(13.5) S	(13.5) S	(13.8) JS	12.6	11.7	9.0	(7.2) S	6.5	6.2	6.2
16	6.7	(6.5) S	6.6	6.3	(5.6) JS	6.1	6.5	9.0	10.8	[12.1] C	13.4	13.0	12.6	12.5	12.5	12.2	10.8	9.8	8.7	7.7	(6.6) J	5.8	5.5	5.3
17	5.0	5.0	[4.8] C	4.7	(4.0) J	3.8	4.7	8.5	10.8	[11.8] C	12.6	13.0	13.1	12.6	(12.1) SP	(11.9) S	(11.0) S	(9.6) JS	(8.4) S	(6.9) S	(6.3) JS	6.5	(6.0) SP	5.9
18	6.0	5.6	(5.5) SP	(5.2) JS	5.0	(4.8) SP	(5.2) S	8.8	11.0	12.2	13.0	13.8	14.0	13.8	(13.1) P	12.9	12.4	10.9	8.6	8.2	7.6	(7.7) J	(7.6) J	(7.1) J
19	(6.8) F	6.8	(6.3) F	(5.9) JF	(5.7) J	5.7	(5.8) JS	8.9	(10.5) J	12.0	12.6	[13.0] C	[12.8] C	12.7	(13.0) F	(13.4) SP	[13.4] C	12.5	(12.0) JS	(9.4) F	8.2	7.0	(7.0) SP	(7.4) SP
20	(6.4) JS	F	F	F	F	F	5.4 F	(8.8) J	12.0	12.9	13.0	14.0	14.1	(13.7) P	(13.2) J	13.0	(11.9) P	9.8	9.0	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	11.0	11.9	13.2	12.6	13.0	12.6	12.0	(12.1) P	11.3	(11.1) SP	8.0	(6.5) S	(6.6) S	(6.2) JS	6.3
22	(5.9) JS	5.5	4.8	(4.5) SP	4.0	3.9	(4.2) J	7.7	(10.7) F	11.7	12.4	13.0	12.8	12.3	12.2	12.8	[11.4] S	(9.7) SP	9.3	(8.0) JS	(6.3) JS	(5.8) JS	(5.7) SP	4.8
23	5.0	[4.1] S	[4.0] S	(4.1) J	[4.0] S	[4.0] S	4.7	7.9	(10.0) JS	10.8	12.1	(12.7) J	12.9	(12.7) SP	(11.9) SP	(11.3) S	(10.5) JS	(10.0) SP	(8.6) SP	(7.8) SP	[7.0] S	(6.1) JS	(6.1) S	(5.7) SP
24	(5.5) S	5.7	5.4 F	5.6	(5.0) SP	4.3	(4.2) SF	(8.0) S	(9.8) JS	10.5	11.6	(12.7) SP	(12.5) SP	[12.7] C	(12.2) JS	11.2	10.8	(9.2) J	8.3	(6.4) J	(6.4) SP	(4.9) SP	[4.4] S	(4.5) SP
25	4.2	(4.2) JS	4.2	4.1 F	(3.8) JF	(3.2) S	3.9	7.8	(9.9) J	11.4	12.0	12.9	[13.0] M	(13.0) JS	(12.3) S	(12.8) SP	(12.1) JS	(10.4) SP	(9.2) SP	(7.2) SP	[6.2] SP	(5.3) JS	(4.7) JP	(5.0) JS
26	(5.2) JS	(4.8) JF	5.0 F	(4.8) JF	3.7 F	3.3 F	3.6 F	(7.6) SP	(10.3) SP	11.2	(11.9) J	(11.4) SP	(12.1) SP	11.6	11.4	(11.6) JS	(11.2) J	(10.0) JS	(8.8) JS	(7.8) JS	(6.2) JS	(5.3) SP	(5.0) JS	(5.2) S
27	(5.0) JS	(5.4) S	(4.8) JS	(4.2) J	3.9	(4.1) JS	(4.2) JS	(7.7) F	10.7	11.1	12.4	(12.6) S	12.7	(12.8) JS	12.6	(12.7) SP	11.3	(10.2) JS	(8.8) S	(7.2) JS	(6.9) JS	(6.1) JS	(5.9) S	5.0
28	(4.6) JS	(4.0) JS	(3.9) JS	(4.0) SP	(3.9) JS	(3.8) S	(4.2) JS	(8.2) S	(9.7) S	11.0	11.9	(12.1) JS	(12.0) SP	12.8	(11.7) SP	(11.6) J	10.9	9.3	8.7	(6.5) JS	(5.4) SP	(5.1) JS	5.3	5.8
29	5.7	5.6	(4.8) J	4.3 F	4.1 F	4.2 F	4.2 F	6.8	(9.2) JS	9.8	11.3	11.8	12.8	12.6	(11.7) SP	(12.0) JS	11.2	9.7	(8.7) SK	7.1 K	K (6.7) JS	K (6.6) JS	K (6.4) JF	4.6 K
30	SK (5.7) F	(3.9) FK	(9.2) FK	(3.1) FK	(3.1) FK	(3.4) FK	3.7 F	6.4 F	(8.8) J	(9.2) JS	11.3	12.3	[12.0] C	12.1	11.7	11.6	(11.5) JS	(10.7) SP	9.2	P (8.0) JS	K (5.9) SP	(5.0) SK	FK (4.2) JS	K (3.1) SF
31																								
Median	(5.6)	5.5	(5.3)	(5.0)	4.6	(4.2)	5.4	8.8	10.8	11.9	12.7	13.2	13.1	13.0	13.0	12.8	12.0	10.9	9.2	(8.0)	(6.7)	(6.5)	(6.2)	5.8
Count	28	27	27	27	27	27	28	28	29	30	30	30	30	30	30	30	30	30	30	29	29	29	29	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 703519

TABLE 38

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

Form adopted June 1946

h'F1 (Characteristic), Km (Unit), November (Month), 1949

Observed at Washington, D. C.

Lat 38.7°N, Long 77.1°W

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C., J.J.S.

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	Q K	Q K	230K	240K	Q K	250K	B K	240K							
2									Q	Q	C	Q	Q	Q	Q	Q	Q							
3									Q	Q	Q	Q	Q	Q	Q	Q	Q							
4									Q	Q	Q	Q	Q	Q	Q	Q	Q							
5									Q	Q	200	220	Q	Q	Q	Q	Q							
6									Q	Q	Q	Q	Q	Q	Q	Q	Q							
7									Q	Q	Q	Q	Q	Q	210	Q	Q							
8									Q	Q	Q	Q	Q	Q	Q	Q	Q							
9									Q	Q	Q	Q	210	Q	Q	Q	Q							
10									Q	Q	Q	Q	Q	Q	Q	Q	Q							
11									Q	Q	Q	Q	Q	Q	Q	Q	Q							
12									Q	Q	Q	Q	Q	Q	Q	Q	Q							
13									Q	Q	Q	Q	Q	Q	Q	Q	Q							
14									Q	Q	M	Q	Q	Q	Q	Q	Q							
15									Q	Q	Q	Q	210	Q	Q	Q	Q							
16									Q	C	C	Q	Q	Q	Q	Q	Q							
17									Q	Q	Q	Q	Q	Q	Q	Q	Q							
18									Q	Q	Q	Q	Q	Q	Q	Q	Q							
19									Q	Q	Q	Q	Q	Q	Q	Q	Q							
20									Q	Q	Q	Q	Q	Q	Q	Q	Q							
21									C	Q	Q	210	Q	Q	Q	Q	Q							
22									Q	Q	Q	Q	Q	Q	C	Q	Q							
23									Q	Q	Q	Q	C	C	Q	Q	C							
24									Q	Q	Q	Q	Q	Q	Q	Q	Q							
25									Q	Q	Q	220	Q	M	Q	Q	Q							
26									Q	Q	Q	Q	220	Q	Q	Q	Q							
27									Q	Q	Q	Q	Q	Q	Q	Q	Q							
28									Q	Q	Q	Q	Q	Q	Q	Q	Q							
29									Q	Q	Q	Q	Q	Q	Q	Q	Q							
30									Q	Q	Q	Q	Q	C	Q	Q	Q							
31																								
Median											—	—	—	—	—	—	—							
Count											1	4	4		2		1							

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 39

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

foF1 (Characteristic), Mc (Unit), November (Month), 1949

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	Q^K	Q^K	L^K	L^K	Q^K	L^K	B^K	L^K							
2									Q	Q	C	Q	Q	Q	Q	Q	Q							
3									Q	Q	Q	Q	Q	Q	Q	Q	Q							
4									Q	Q	Q	Q	Q	Q	Q	Q	Q							
5									Q	Q	L	L	Q	Q	Q	Q	Q							
6									Q	Q	Q	Q	Q	Q	Q	Q	Q							
7									Q	Q	Q	Q	Q	Q	L	Q	Q							
8									Q	Q	Q	Q	Q	Q	Q	Q	Q							
9									Q	Q	Q	Q	L	Q	Q	Q	Q							
10									Q	Q	Q	Q	Q	Q	Q	Q	Q							
11									Q	Q	Q	Q	Q	Q	Q	Q	Q							
12									Q	Q	Q	Q	Q	Q	Q	Q	Q							
13									Q	Q	Q	Q	Q	Q	Q	Q	Q							
14									Q	Q	M	Q	Q	Q	Q	Q	Q							
15									Q	Q	Q	Q	L	Q	Q	Q	Q							
16									Q	C	C	Q	Q	Q	Q	Q	Q							
17									Q	Q	Q	Q	Q	Q	Q	Q	Q							
18									Q	Q	Q	Q	Q	Q	Q	Q	Q							
19									Q	Q	Q	Q	Q	Q	Q	Q	Q							
20									Q	Q	Q	Q	Q	Q	Q	Q	Q							
21									C	Q	Q	L	Q	Q	Q	Q	Q							
22									Q	Q	Q	Q	Q	Q	C	Q	Q							
23									Q	Q	Q	Q	C	C	Q	Q	C							
24									Q	Q	Q	Q	Q	Q	Q	Q	Q							
25									Q	Q	Q	L	Q	M	Q	Q	Q							
26									Q	Q	Q	Q	5.9	Q	Q	Q	Q							
27									Q	Q	Q	Q	Q	Q	Q	Q	Q							
28									Q	Q	Q	Q	Q	Q	Q	Q	Q							
29									Q	Q	Q	Q	Q	Q	Q	Q	Q							
30									Q	Q	Q	Q	Q	C	Q	Q	Q							
31																								
Median											—	—	—	—	—	—	—							
Count													1											

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 40

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

h'E (Characteristic), Km (Unit), November (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								120	[110]B	100K	100K	100K	100K	110K	110K	S K	B K							
2							C	C	B	(100)A	[100]C	(100)A	110	110	[110]B	110	(100)A							
3									110	110	110	110	110	110	110	110	S	S						
4								110	100	100	100	100	110	110	110	(100)A	(100)A	(100)A						
5								120	110	(100)A	100	100	110	100	100	100	100							
6								120	110	(100)A	(100)A	B	B	100	100	100	(100)A							
7								150	(100)A	(100)A	(100)A	110	110	(100)A	(100)A	(100)A	(100)A							
8								(110)A	[100]A	(100)A	100	110	110	(100)A	110	(100)A	(100)A	(100)A						
9								130	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	[100]B	(100)A						
10								150	110	110	(110)A	130	110	110	110	110	110							
11								120	110	(100)S	110	B	B	B	(100)S	110	110							
12								160	120	110	[110]B	110	[110]B	110	110	100	100	S						
13								(100)A	(100)A	(100)A	(100)A	(100)A	(110)B	B	B	110	120							
14								(110)A	110	100	[100]M	100	110	[110]S	110	110	S							
15								(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A	(100)A						
16									(100)A	C	C	120	110	110	(100)A	(100)A	B							
17								160	130	110	(100)A	(100)A	120	110	110	110	110							
18								170	130	120	110	(130)B	110	110	B	B	B	B						
19									B	B	B	B	B	B	B	B	B	B						
20									120	110	110	[100]B	(100)A	110	110	110	B							
21							C	C	C	(100)A	[100]B	110	100	(100)A	110	110	110							
22								(100)A	(100)A	[110]B	120	110	110	110	C	S	110							
23									120	110	120	110	[110]C	[110]C	(110)S	110	C							
24									110	100	[100]B	100	B	B	B	100	(120)A	B						
25									(110)A	110	100	110	100	M	B	110	110							
26									110	100	B	B	110	110	110	110	110	S						
27									110	100	110	110	[110]B	110	(110)A	110	110	(100)A						
28									(100)A	(100)A	100	110	100	110	100	100	(100)A	(100)A						
29										100	110	110	110	110	110	B	B	B						
30										110	110	B	B	110	110	110	110							
31																								
Median								120	110	100	100	110	110	110	110	110	110	(100)						
Count								16	25	28	27	25	25	25	24	25	21	6						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946

Form adopted June 1946

TABLE 41

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

foE (Characteristic), Mc (Unit), November (Month), 1949

Observed at Washington, D. C.

Lat 38.7°N, Long 77.1°W

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B, R.E.C.

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								1.8	[2.4]^{B}	2.9^{K}	3.1^{K}	3.2^{K}	3.4^{K}	3.4^{K}	(3.3)$^{S}_{K}$	S^{K}	B^{K}							
2							C	C	B	A	C	3.5	3.4	(3.4)^{B}	[3.2]^{B}	2.9	A							
3									2.6	3.1	3.3	3.4	[3.4]^{B}	3.4	3.3	2.9	[2.4]^{S}	1.8						
4								1.9	2.7	3.1	3.3	3.4	3.6	3.4	3.3	(3.0)^{A}	A	A						
5								1.9	2.5	3.1	3.3	3.4	3.5	3.5	3.5	3.0	2.2							
6								1.8	2.6	3.1	A	B	B	3.6	3.4	2.9	2.4							
7								1.9	(2.5)^{S}	3.1	3.4	3.5	3.6	3.5	3.4	3.2	2.4							
8								1.8	[2.4]^{A}	3.0	3.4	3.5	3.4	3.6	(3.3)^{B}	3.1	A	A						
9								(1.7)^{S}	(2.6)^{S}	[2.9]^{A}	3.2	A	A	(3.3)^{B}	3.5	3.1	B	A						
10								2.0	2.4	2.9	[3.2]^{A}	3.4	3.4	3.6	3.1	2.9	2.3							
11								1.8	(2.5)^{S}	[2.8]^{S}	3.1	B	B	B	(3.1)^{S}	2.9	2.2							
12								1.8	2.4	3.0	[3.2]^{B}	3.4	[3.4]^{B}	(3.3)^{B}	3.3	2.8	(2.4)^{S}	S						
13								A	A	A	A	A	(3.3)^{B}	B	B	2.7	2.2							
14								A	(2.5)^{S}	2.8	[3.0]^{M}	(3.2)^{B}	3.5	[3.4]^{S}	3.3	3.0	S							
15								A	A	A	A	(3.3)^{A}	A	A	A	A	2.6	A						
16									A	C	C	3.1	3.5	(3.3)^{S}	3.2	2.9	B							
17								1.9	2.5	3.1	3.5	3.4	(3.4)^{B}	3.5	(3.3)^{B}	2.8	(2.0)^{B}							
18								1.9	2.5	2.8	3.1	3.4	3.5	(3.5)^{B}	B	B	B	B						
19									B	B	B	B	B	B	B	B	B	B						
20									2.4	2.9	2.9	B	A	3.3	(3.0)^{S}	2.8	B							
21							C	C	C	A	B	3.1	3.3	[3.2]^{A}	3.1	2.6	2.2							
22								A	A	B	3.0	3.0	3.3	3.2	C	S	2.1							
23									(2.4)^{S}	2.8	3.2	3.3	[3.2]^{C}	[3.2]^{C}	3.1	(2.8)^{S}	C							
24									(2.1)^{B}	2.5	[2.8]^{B}	3.1	B	B	B	(2.5)^{S}	2.2	B						
25									2.4	2.7	2.7	3.5	3.4	M	B	2.7	2.2							
26									2.4	2.8	B	B	3.5	(3.4)^{P}	3.2	2.7	2.1	S						
27									2.3	2.8	2.7	B	B	B	A	2.8	2.1	A						
28									(2.4)^{A}	2.7	3.1	3.4	3.3	3.5	3.1	2.8	A	A						
29										2.9	3.1	3.2	3.2	3.2	3.1	B	B	B						
30										2.7	2.8	B	B	[3.1]^{C}	3.0	(3.0)^{B}	2.2							
31																								
Median								1.8	2.4	2.9	3.1	3.4	3.4	3.4	3.2	2.9	2.2	–						
Count								12	21	23	22	21	21	23	22	24	17	1						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U. S. GOVERNMENT PRINTING OFFICE 1946 O - 702619

TABLE 42

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

Es (Characteristic), Mc,Km (Unit), November (Month), 1949

Observed at Washington, D.C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	8.4/100
2	6.0/100	C	C	C	C	C	C	C	G	2.7/100	C	2.7/100	G	G	G	G	2.8/100	G	G	G	G	G	G	G
3	G	G	G	G	G	3.4/100	G	G	G	G	G	2.6/100	G	G	G	G	G	G	G	G	G	6.6Y/100	5.2Y/100	1.9Y/100
4	2.0Y/100	G	1.3/100	G	5.6Y/100	4.3Y/100	5.7Y/100	G	G	G	G	G	G	G	G	2.8Y/100	3.6Y/100	2.3Y/100	2.4Y/100	G	G	G	G	G
5	G	G	G	G	G	G	G	G	G	2.7/100	G	G	G	G	G	G	G	G	G	G	G	G	G	G
6	G	G	G	G	G	G	G	G	G	2.6/100	3.4/100	G	G	G	G	G	2.2/100	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	1.9/110	2.6Y/100	2.5/100	G	G	1.9/100	2.3/100	2.5Y/100	2.0/100	G	G	G	G	G	G	G
8	G	G	G	G	G	G	G	G	1.8/110	2.7/100	3.0/100	G	G	1.8/100	G	2.7/100	2.4/100	2.0/100	G	G	5.1Y/100	2.0Y/100	3.4Y/100	3.5/100
9	G	G	4.3Y/100	3.9/100	G	G	G	G	2.4/100	3.0/100	2.7/100	4.3Y/100	4.7/100	2.7/100	3.0/100	1.9/100	2.0/100	3.4/100	G	3.3Y/100	3.5/100	G	G	2.1/100
10	G	G	G	G	G	G	G	G	G	G	2.8/110	G	G	G	G	G	G	G	G	G	G	G	G	G
11	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
12	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
13	G	G	G	G	G	3.0Y/110	G	2.4/100	3.5/100	8.0/100	7.0/100	3.5Y/100	G	G	G	G	G	G	G	G	G	G	G	G
14	G	G	G	G	G	G	G	1.8/110	G	G	M	G	G	G	G	G	G	5.6/100	G	G	3.6/100	G	3.5/100	2.8Y/100
15	G	G	G	3.0/100	G	G	2.7Y/100	4.2Y/100	4.0Y/100	3.9/100	4.2/100	3.0/100	5.2/100	3.6/100	3.3/100	3.1/100	2.4/100	2.6/100	4.2Y/100	2.6/100	1.9/100	G	G	G
16	G	G	G	G	G	G	G	1.7/100	2.5/100	C	C	G	G	G	2.6/100	2.4/100	G	G	G	G	5.0Y/100	3.7Y/100	4.9Y/100	G
17	G	G	G	G	G	G	G	G	G	G	2.7/100	2.8/100	G	G	G	G	G	G	2.0/100	2.0/100	G	G	G	G
18	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
19	1.9/100	3.0Y/100	2.8Y/100	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	3.0Y/140	G
20	G	G	G	G	2.5Y/120	G	G	2.0/120	G	G	G	G	3.6/100	G	G	G	G	G	G	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	2.8/100	G	G	G	3.2/100	G	G	G	G	G	G	3.2/100	3.3/100	G	G
22	G	G	G	G	C	G	G	3.6/100	2.2/100	G	G	G	G	G	C	G	G	G	2.3/100	G	G	G	G	G
23	2.0/100	G	3.3/100	G	G	G	G	G	G	G	G	G	C	C	G	G	C	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	1.9/120	G	G	3.0/100	G	G	G
25	G	G	G	G	G	G	G	G	2.2/110	G	G	G	G	M	G	G	G	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	2.7/100	2.2/100	G	S	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	4.1/110	G	G	3.5Y/100	G	G	G	G	G	G
28	G	3.1Y/100	G	G	G	G	G	G	2.8/100	2.2/100	G	G	G	G	G	G	2.6Y/100	3.2/100	1.8/100	G	G	G	G	G
29	G	G	G	1.5/110	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
30	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
31																								
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	29	28	28	28	27	28	28	28	29	29	27	30	29	28	29	30	29	29	30	29	29	29	29	29

** MEDIAN fEs LESS THAN MEDIAN foE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER.

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U.S. GOVERNMENT PRINTING OFFICE 1946 O - 702519

TABLE 43

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Form adopted June 1946

IONOSPHERIC DATA

(M1500)F2 (Characteristic), ____ (Unit), November (Month), 1949

Observed at Washington, D. C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.8F	1.9F	1.9F	1.9	1.8	1.7	1.8	2.1	2.2	2.1K	1.9K	1.8FK	1.8FK	1.9FK	K(1.7)JS	1.6K	1.8K	1.8K	(1.7)JK	1.8K	J(1.7)SK	(1.7)S	S	A
2	1.8	C	C	C	C	C	C	C	2.2	2.1	C	2.0	(1.9)S	(2.0)S	2.0	S	2.0	(2.1)SP	S	(2.0)S	S	1.6F	1.7F	(2.0)SF
3	(1.9)SF	(1.7)F	1.7F	1.7F	1.7	1.9	1.8	2.3	2.1	2.1	2.1	2.0	2.0	(2.1)S	2.0	2.0	2.1	2.0	(1.9)JS	2.0	2.1	1.9	2.0	(1.9)JS
4	(1.8)JS	(1.8)JS	(1.8)JS	(1.9)JS	(1.8)JS	(1.6)JS	(1.6)JS	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	1.9	2.0	2.0	(2.0)JS	2.0	(1.9)JS	1.8	2.0
5	(1.9)JS	(1.8)JS	(1.7)JS	(1.7)JS	1.7	1.6	1.7	2.1	2.2	2.2	2.0	1.9	1.9	1.9	2.0	2.0	1.9	2.0	1.8	(1.9)JS	1.9	(1.9)S	(1.9)SP	1.8
6	1.7	1.8	1.9	1.9	(1.7)S	1.8	1.8	2.1	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	(1.9)S	2.0	(2.0)JS	1.9	(1.9)JS	1.9
7	(1.8)S	1.9	1.9	1.9	2.0	(1.9)JS	1.9	2.0	2.2	2.2	2.2	2.0	1.9	1.9	1.8	1.8	1.9	2.0	2.0	2.0	2.0	(2.0)SP	2.0	(1.9)JS
8	1.9	1.9	1.8	(1.9)JS	1.9	1.9	2.0	2.3	2.4	2.2	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9
9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	2.0	2.1	2.1	2.0	2.1	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.8	1.9	(1.9)JS	1.9
10	(1.8)JS	(1.9)JS	1.9	1.9	(1.6)S	(1.6)JS	1.6	(2.0)JS	2.1	2.2	2.1	2.0	(1.9)S	2.1	1.9	2.0	2.0	(1.9)SP	(1.9)JS	1.9	1.9	(1.8)S	(1.8)JS	1.8
11	1.7	(1.5)S	(1.6)SP	1.6	(1.7)S	(1.8)JS	(1.6)JS	2.0	2.1	2.1	2.1	2.0	(2.0)S	1.9	2.0	1.9	2.0	2.0	2.0	1.9	1.9	2.0	1.9	1.9
12	(1.9)JS	1.9	(1.8)JS	1.8	1.8	1.8	(1.9)JS	(2.1)S	2.2	2.3	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	(2.0)JS	S	(1.7)S	S	(1.8)JS
13	1.7	1.7	(1.7)JS	(1.8)JS	1.9	(1.8)S	1.8	2.1	2.3	2.0	2.1	2.0	(2.1)S	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.1	(2.0)S	(1.9)SP	(2.0)JS
14	(1.9)JS	(1.8)JS	(1.6)SF	(1.9)SF	(1.8)SF	1.7F	1.7F	2.1	2.2	2.2	M	2.0	2.0	2.0	2.0	1.9	2.1	(1.9)JS	1.9	2.0	2.0	2.0	1.9	(2.0)JS
15	(1.9)SP	1.8	(1.9)SP	(2.0)SP	(2.0)SP	(2.0)SP	(1.9)S	(2.1)S	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	(2.0)JS	2.0	1.9	2.0	2.0	1.7	1.7	1.7
16	1.8	(1.7)S	1.9	1.9	1.9	1.8	1.9	(2.1)SP	2.2	C	C	2.0	2.0	2.1	1.9	1.9	2.1	2.1	2.0	2.0	2.1	2.0	2.0	1.9
17	1.9	1.8	1.9	1.9	2.0	1.8	1.9	2.0	2.3	2.2	2.1	2.0	2.0	2.0	2.0	(2.0)SP	(2.0)S	(2.0)JS	(1.9)SP	(1.9)S	2.0	(1.9)SP	(2.0)S	1.9
18	1.9	(2.0)JS	1.9	(1.9)SP	1.9	(1.9)S	1.9	(2.1)S	2.2	2.2	2.2	2.0	2.0	(1.9)S	(2.0)P	(2.0)P	2.0	(2.0)J	(1.9)J	1.9	1.8	1.8	(1.9)J	1.9F
19	(1.9)J	1.9	(1.9)JF	(1.9)F	(1.8)J	(1.8)J	1.8	2.0	(2.2)F	2.1	2.1	2.0	1.9	1.8	(1.8)P	(1.8)P	(1.9)SP	1.9	1.9	1.8	(1.7)P	(1.7)JS	(1.7)SP	(1.6)JS
20	1.9	F	F	1.6F	F	F	(2.0)F	(2.0)J	2.0	2.1	2.2	2.0	(2.0)SP	(2.0)JS	2.0	1.9	2.0	(2.0)J	1.9	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	2.3	2.0	2.0	2.1	2.0	2.0	(2.0)J	2.0	(2.0)SP	2.0	2.3	2.0	(1.9)SP	(1.9)SP	(1.8)S
22	1.9	(2.0)JS	2.0	2.0	(2.0)JS	1.9	1.9	(2.0)J	(2.3)J	2.2	2.1	2.1	2.0	2.1	C	(2.0)S	(2.1)S	(2.1)SP	(2.1)SP	2.1	(2.2)SP	2.0	(2.1)S	2.2
23	(2.0)JS	(2.1)JS	1.8	(1.9)JS	(1.9)JS	(1.9)JS	(2.1)JS	(2.1)JS	2.4	2.3	(2.1)J	(2.0)S	C	C	(2.1)SP	(2.1)SP	C	(2.0)S	2.0	(2.0)JP	(2.1)JS	2.0	(2.0)JS	(1.9)SP
24	(1.8)JS	(1.8)JF	1.8F	1.8	(1.9)S	(2.0)S	(2.0)SF	2.2	2.4	2.2	2.3	2.1	(2.1)JS	2.1	(2.0)JS	2.0	2.1	(2.0)JS	(2.2)J	(2.2)J	(2.1)S	(2.2)SP	(2.0)SP	(2.0)S
25	1.9	2.1	S	(2.0)SF	(2.1)SF	1.9	(1.9)JS	(2.2)S	(2.3)SP	2.2	2.2	(2.1)SP	2.2	M	2.1	2.1	(2.1)SP	2.0	(2.1)SP	(2.2)SP	(2.2)J	(2.1)SP	(2.0)SP	(1.9)SP
26	(2.0)SP	(1.9)SF	(2.0)JF	(2.1)JS	(2.1)SF	S	(2.0)SF	2.3F	(2.2)SP	(2.3)J	2.2	2.1	2.1	2.1	1.9	2.0	(2.1)SP	S	(2.0)SP	S	2.1	1.8	(1.7)JS	1.7
27	1.7	(1.9)S	(1.9)SP	(1.9)JS	(1.8)JS	(1.7)JS	(1.8)JS	2.0	2.2	2.1	2.0	(2.1)SP	1.9	2.0	(2.0)SP	1.9	2.0	2.0	(2.0)JS	(2.0)JS	(2.0)JS	(2.1)JS	2.0	2.2
28	2.0	(2.0)S	(1.8)SF	(1.8)S	1.8	1.9	(2.0)S	(2.1)S	(2.1)S	(2.3)S	2.0	2.0	(2.0)S	2.0	2.0	(1.9)SP	(2.0)SP	2.0	2.0	(2.0)JS	(2.0)JS	(1.7)JS	(1.7)JS	(1.7)JS
29	1.8	1.7	1.7	1.8F	1.7F	1.6P	1.7F	1.8F	(2.1)SP	2.1	2.1	2.1	1.9	2.0	(1.9)JS	(1.9)JS	1.8	1.9	1.9K	1.9K	1.9K	1.8K	J(1.9)SK	J(1.9)SK
30	1.8FK	1.8FK	(1.9)FK	(1.9)FK	(1.6)FK	(1.7)FK	1.7F	1.9F	(2.0)J	2.1	(1.9)J	(2.0)J	2.0	C	2.0	2.0	2.0	(1.9)SP	(1.9)JS	2.0	S(2.0)PK	K(1.9)SJ	1.9FK	(2.0)FK
31																								
Median	1.9	(1.8)	1.8	1.9	(1.8)	1.8	1.8	2.1	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	(1.9)	(1.9)	(1.9)
Count	29	27	26	28	27	26	28	28	29	29	27	30	29	27	29	29	29	29	29	29	27	29	27	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 44

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

Form adopted June 1946

(M3000)F2 (Characteristic), ____ (Unit), November (Month), 1949

Observed at Washington, D. C.

Lat 38.7°N, Long 77.1°W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.8^{F}	2.9^{F}	2.8^{F}	2.8	2.7	2.6	2.8	3.1	3.3	3.2^{K}	2.8^{K}	2.7^{F}_{K}	2.8^{F}_{K}	2.8^{F}_{K}	$^{K}(2.6)^{J}_{S}$	2.6^{K}	2.7^{K}	2.8^{K}	$(2.6)^{J}_{K}$	2.8^{K}	$^{K}(2.6)^{J}_{S}$	$(2.6)^{S}$	S	A
2	2.8	C	C	C	C	C	C	C	3.2	3.1	C	2.9	$(2.9)^{S}$	$(2.9)^{S}$	3.0	S	3.0	$(3.0)^{S}_{P}$	S	$(3.0)^{S}$	S	2.5^{F}	2.6^{F}	$(2.9)^{S}_{F}$
3	$(2.9)^{S}_{F}$	$(2.7)^{F}$	2.6^{F}	2.7^{F}	2.7	2.9	2.8	3.5	3.2	3.1	3.0	3.0	3.0	$(3.0)^{S}$	3.1	3.0	3.1	3.0	$(2.9)^{J}_{S}$	2.9	3.1	2.9	3.0	$(2.9)^{J}_{S}$
4	$(2.8)^{J}_{S}$	$(2.8)^{J}_{S}$	$(2.7)^{J}_{S}$	$(2.8)^{J}_{S}$	$(2.7)^{J}_{S}$	$(2.4)^{J}_{S}$	$(2.4)^{J}_{S}$	3.1	3.3	3.2	3.1	3.0	2.9	2.9	2.9	2.9	2.9	3.0	3.0	$(3.1)^{J}_{S}$	3.0	$(2.9)^{J}_{S}$	2.7	2.9
5	$(2.9)^{J}_{S}$	$(2.8)^{J}_{S}$	$(2.6)^{J}_{S}$	$(2.6)^{J}_{S}$	2.6	2.5	2.5	3.1	3.2	3.3	3.0	2.9	2.9	2.9	2.8	2.9	2.9	2.9	2.8	$(2.9)^{J}_{S}$	2.9	$(2.9)^{S}$	$(2.8)^{S}_{P}$	2.8
6	2.6	2.8	2.9	2.9	$(2.6)^{S}$	2.7	2.8	3.1	3.3	3.1	3.1	3.0	2.9	2.9	2.9	2.9	3.0	3.0	$(2.9)^{S}$	3.0	$(3.0)^{J}_{S}$	2.9	$(2.9)^{J}_{S}$	2.9
7	$(2.8)^{S}$	2.8	2.8	2.9	3.0	$(2.9)^{J}_{S}$	2.9	3.0	3.3	3.2	3.2	3.0	2.9	2.9	2.8	2.8	2.9	3.0	3.0	3.0	2.9	$(3.0)^{S}_{P}$	3.0	$(2.9)^{J}_{S}$
8	2.9	2.8	2.8	$(2.9)^{J}_{S}$	2.8	2.9	3.0	3.3	3.4	3.2	3.1	3.0	2.9	2.8	3.0	2.9	3.0	3.0	2.9	2.9	2.8	3.0	2.9	2.9
9	2.8	2.8	2.8	2.8	2.6	2.6	2.6	3.0	3.2	3.1	2.9	3.0	3.0	2.8	2.8	2.9	2.9	2.6	2.9	3.0	2.8	2.8	$(2.9)^{J}_{S}$	2.9
10	$(2.8)^{J}_{S}$	$(2.8)^{J}_{S}$	2.9	2.9	$(2.5)^{S}$	$(2.4)^{J}_{S}$	2.5	$(3.1)^{J}_{S}$	3.2	3.2	3.0	3.0	$(2.9)^{S}$	3.0	2.9	2.9	3.0	$(2.9)^{S}_{P}$	$(2.8)^{J}_{S}$	2.9	2.8	$(2.8)^{S}$	$(2.8)^{J}_{S}$	2.7
11	2.6	$(2.3)^{S}$	$(2.5)^{S}_{P}$	2.4	$(2.6)^{S}$	$(2.7)^{J}_{S}$	$(2.5)^{J}_{S}$	3.0	3.2	3.1	3.0	2.9	$(2.9)^{S}$	2.8	2.8	2.8	3.0	3.0	3.0	2.9	2.9	3.0	2.9	2.9
12	$(2.9)^{J}_{S}$	2.9	$(2.8)^{J}_{S}$	2.7	2.7	2.8	$(2.8)^{J}_{S}$	$(3.2)^{S}$	3.3	3.3	3.1	3.0	2.9	2.9	2.9	3.0	2.9	2.9	3.0	$(3.0)^{J}_{S}$	S	$(2.6)^{S}$	S	$(2.7)^{J}_{S}$
13	2.6	2.6	$(2.6)^{J}_{S}$	$(2.7)^{J}_{S}$	2.8	$(2.8)^{S}$	2.7	3.1	3.4	3.0	3.1	3.0	$(3.1)^{S}$	2.9	2.9	3.0	3.0	3.0	3.0	2.9	3.0	$(3.0)^{S}$	$(2.9)^{S}_{P}$	$(3.1)^{J}_{S}$
14	$(2.9)^{J}_{S}$	$(2.7)^{J}_{S}$	$(2.5)^{S}_{F}$	$(2.8)^{S}_{F}$	$(2.8)^{S}_{F}$	2.6^{F}	2.7^{F}	3.2	3.3	3.2	M	3.0	2.9	3.0	3.0	2.9	3.0	$(2.9)^{J}_{S}$	2.9	3.0	3.1	3.1	2.8	$(3.0)^{J}_{S}$
15	$(2.9)^{S}_{P}$	2.7	$(2.8)^{S}_{P}$	$(3.0)^{S}_{P}$	$(3.0)^{S}_{P}$	$(2.8)^{S}_{P}$	$(2.9)^{S}$	$(3.1)^{S}$	3.2	3.3	3.0	3.1	2.9	2.8	2.9	2.9	$(2.9)^{J}_{S}$	2.8	2.9	3.0	3.0	2.6	2.6	2.6
16	2.7	$(2.6)^{S}$	2.9	2.9	2.8	2.8	2.9	$(3.2)^{S}_{P}$	3.2	C	C	3.0	3.0	3.1	2.9	2.9	3.1	3.0	3.0	3.0	3.1	3.0	3.0	2.9
17	2.9	2.8	2.9	2.9	2.9	2.8	2.9	3.0	3.3	3.2	3.1	3.0	2.9	3.0	3.0	$(3.1)^{S}_{P}$	$(3.0)^{S}$	$(3.1)^{J}_{S}$	$(2.9)^{S}_{P}$	$(2.9)^{S}$	2.9	$(2.9)^{S}_{P}$	$(2.9)^{S}$	2.9
18	2.8	$(3.0)^{J}_{S}$	2.8	$(2.8)^{S}_{P}$	2.8	$(2.8)^{S}$	2.9	$(3.1)^{S}$	3.3	3.3	3.2	3.0	2.9	$(2.9)^{S}$	$(3.0)^{P}$	$(3.0)^{P}$	3.0	$(3.0)^{J}$	$(3.0)^{J}$	2.8	2.7	2.8	$(3.0)^{J}$	$(2.9)^{F}$
19	$(2.9)^{J}$	2.8	$(3.0)^{J}_{F}$	$(2.8)^{F}$	$(2.8)^{J}$	$(2.8)^{J}$	2.7	3.0	$(3.3)^{P}$	3.1	3.1	3.0	2.9	2.7	$(2.7)^{P}$	$(2.7)^{P}$	$(2.9)^{S}_{P}$	2.8	2.9	2.7	$(2.6)^{P}$	$(2.6)^{J}_{S}$	$(2.6)^{S}_{P}$	$(2.4)^{J}_{S}$
20	2.8	F	F	2.5^{F}	F	F	$(3.0)^{F}$	$(3.0)^{J}$	3.0	3.1	3.3	3.0	$(2.9)^{S}_{P}$	$(2.9)^{J}_{S}$	3.0	2.9	2.9	$(2.9)^{J}$	2.9	C	C	C	C	C
21	C	C	C	C	C	C	C	C	C	3.3	3.0	3.1	3.0	3.0	3.0	$(3.0)^{J}$	2.9	$(2.9)^{S}_{P}$	3.0	3.3	3.0	$(2.9)^{S}_{P}$	$(2.9)^{S}_{P}$	$(2.8)^{S}$
22	2.9	$(3.1)^{J}_{S}$	3.0	3.0	$(3.0)^{J}_{S}$	2.9	2.9	$(3.0)^{J}$	$(3.3)^{J}$	3.2	3.2	3.0	3.0	3.0	C	$(3.1)^{S}$	$(3.1)^{S}$	$(3.0)^{S}_{P}$	$(3.2)^{S}_{P}$	3.2	$(3.3)^{S}_{P}$	3.0	$(3.2)^{S}$	3.3
23	$(3.1)^{J}_{S}$	$(3.1)^{J}_{S}$	2.7	$(2.9)^{J}_{S}$	$(3.0)^{J}_{S}$	$(2.9)^{J}_{S}$	$(3.1)^{J}_{S}$	$(3.1)^{J}_{S}$	3.4	3.4	$(3.0)^{J}$	$(3.0)^{S}$	C	C	$(3.1)^{S}_{P}$	$(3.1)^{S}_{P}$	C	$(2.9)^{S}$	3.0	$(3.1)^{J}_{P}$	$(3.1)^{S}_{J}$	3.0	$(3.0)^{J}_{S}$	$(2.8)^{S}_{P}$
24	$(2.7)^{J}_{S}$	$(2.8)^{J}_{F}$	2.7^{F}	2.8	$(2.8)^{S}$	$(3.0)^{S}$	$(3.0)^{S}_{F}$	3.2	3.4	3.3	3.3	3.1	$(3.1)^{J}_{S}$	3.1	$(3.1)^{J}_{S}$	3.0	3.1	$(3.0)^{J}_{S}$	$(3.2)^{J}$	$(3.2)^{J}$	$(3.1)^{S}$	$(3.3)^{S}_{P}$	$(2.9)^{S}_{P}$	$(3.0)^{S}$
25	2.9	3.1	S	$(3.0)^{S}_{F}$	$(3.2)^{S}_{F}$	3.0	$(2.9)^{J}_{S}$	$(3.2)^{S}$	$(3.3)^{S}_{P}$	3.3	3.2	$(3.1)^{S}_{P}$	3.1	M	3.0	3.1	$(3.2)^{S}_{P}$	3.0	$(3.2)^{S}_{P}$	$(3.3)^{S}_{P}$	$(3.2)^{J}$	$(3.1)^{S}_{P}$	$(3.0)^{S}_{P}$	$(3.0)^{S}_{P}$
26	$(3.0)^{S}_{P}$	$(3.0)^{S}_{F}$	$(3.0)^{J}_{F}$	$(3.1)^{S}_{J}$	$(3.2)^{S}_{F}$	S	$(3.1)^{S}_{F}$	3.4^{F}	$(3.3)^{S}_{P}$	$(3.4)^{J}$	3.2	3.0	3.1	3.0	2.9	2.9	$(3.1)^{S}_{P}$	S	$(2.9)^{S}_{P}$	S	3.1	2.8	$(2.6)^{J}_{S}$	2.6
27	2.6	$(2.8)^{S}$	$(2.9)^{S}_{P}$	$(2.8)^{J}_{S}$	$(2.7)^{J}_{S}$	$(2.7)^{J}_{S}$	$(2.7)^{J}_{S}$	3.0	3.3	3.2	3.0	$(3.1)^{S}_{P}$	2.8	3.0	$(3.1)^{S}_{P}$	2.9	3.0	2.9	$(3.0)^{J}_{S}$	$(2.9)^{J}_{S}$	$(3.0)^{J}_{S}$	$(3.1)^{J}_{S}$	3.0	3.2
28	3.0	$(3.0)^{S}$	$(2.8)^{S}_{F}$	$(2.7)^{S}$	2.8	2.8	$(3.0)^{S}$	$(3.1)^{S}$	$(3.2)^{S}$	$(3.3)^{S}$	3.0	3.0	$(3.0)^{S}$	3.0	3.0	$(2.9)^{S}_{P}$	$(3.0)^{S}_{P}$	3.0	3.0	$(3.1)^{J}_{S}$	$(3.0)^{J}_{S}$	$(2.5)^{J}_{S}$	$(2.6)^{J}_{S}$	$(2.6)^{J}_{S}$
29	2.7	2.7	2.6	2.8^{F}	2.6^{F}	2.4^{F}	2.6^{F}	2.8^{F}	$(3.1)^{S}_{P}$	3.1	3.1	3.0	2.9	2.9	$(2.8)^{J}_{S}$	$(2.8)^{J}_{S}$	2.9	2.9	2.9^{K}	2.9^{K}	2.8^{K}	2.7^{K}	$^{K}(2.8)^{J}_{S}$	$^{K}(2.9)^{J}_{F}$
30	2.8^{F}_{K}	2.8^{F}_{K}	$(2.9)^{F}_{K}$	$(2.8)^{F}_{K}$	$(2.5)^{F}_{K}$	$(2.6)^{F}_{K}$	2.7^{F}	2.9^{F}	$(3.0)^{J}$	3.2	$(2.8)^{J}$	$(3.0)^{J}$	3.0	C	3.0	3.0	3.0	$(2.9)^{S}_{P}$	$(2.9)^{J}_{S}$	3.0	$^{K}(3.1)^{S}_{P}$	$^{K}(2.8)^{S}_{J}$	3.0^{F}_{K}	$(3.1)^{F}_{K}$
31																								
Median	2.8	(2.8)	2.8	2.8	(2.8)	2.8	2.8	3.1	3.3	3.2	3.1	3.0	2.9	2.9	2.9	2.9	3.0	3.0	2.9	3.0	3.0	(2.9)	(2.9)	(2.9)
Count	29	27	26	28	27	26	28	28	29	29	27	30	29	27	29	29	29	29	29	28	27	29	27	28

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 45

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

Form adopted June 1946

IONOSPHERIC DATA

(M3000)F1 , ______ (Characteristic) (Unit) November (Month), 1949

Observed at Washington, D.C.

Lat. 38.7°N , Long. 77.1W

75°W Mean Time

National Bureau of Standards (Institution)

Scaled by: B.E.B., J.D., J.E.L.

Calculated by: B.E.B., R.E.C., J.J.S.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1									Q	Q K	Q K	L K	L K	Q K	L K	B K	L K									
2									Q	Q	C	Q	Q	Q	Q	Q	Q									
3									Q	Q	Q	Q	Q	Q	Q	Q	Q									
4									Q	Q	Q	Q	Q	Q	Q	Q	Q									
5									Q	Q	L	L	Q	Q	Q	Q	Q									
6									Q	Q	Q	Q	Q	Q	Q	Q	Q									
7									Q	Q	Q	Q	Q	Q	L	Q	Q									
8									Q	Q	Q	Q	Q	Q	Q	Q	Q									
9									Q	Q	Q	Q	L	Q	Q	Q	Q									
10									Q	Q	Q	Q	Q	Q	Q	Q	Q									
11									Q	Q	Q	Q	Q	Q	Q	Q	Q									
12									Q	Q	Q	Q	Q	Q	Q	Q	Q									
13									Q	Q	Q	Q	Q	Q	Q	Q	Q									
14									Q	Q	M	Q	Q	Q	Q	Q	Q									
15									Q	Q	Q	Q	L	Q	Q	Q	Q									
16									Q	C	C	Q	Q	Q	Q	Q	Q									
17									Q	Q	Q	Q	Q	Q	Q	Q	Q									
18									Q	Q	Q	Q	Q	Q	Q	Q	Q									
19									Q	Q	Q	Q	Q	Q	Q	Q	Q									
20									Q	Q	Q	Q	Q	Q	Q	Q	Q									
21									C	Q	Q	L	Q	Q	Q	Q	Q									
22									Q	Q	Q	Q	Q	Q	C	Q	Q									
23									Q	Q	Q	Q	C	C	Q	Q	C									
24									Q	Q	Q	Q	Q	Q	Q	Q	Q									
25									Q	Q	Q	L	Q	M	Q	Q	Q									
26									Q	Q	Q	Q	3.9	Q	Q	Q	Q									
27									Q	Q	Q	Q	Q	Q	Q	Q	Q									
28									Q	Q	Q	Q	Q	Q	Q	Q	Q									
29									Q	Q	Q	Q	Q	Q	Q	Q	Q									
30									Q	Q	Q	Q	Q	C	Q	Q	Q									
31																										
Median											–	–	–	–	–	–	–									
Count													1													

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

TABLE 46

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

Form adopted June 1946

(M1500) E (Characteristic), ______ (Unit), November (Month), 1949

National Bureau of Standards (Institution)

Observed at Washington, D. C.

Scaled by: B.E.B., J.D., J.E.L.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

Calculated by: B.E.B., R.E.C.

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1								4.2	B	4.1^{K}	4.0^{K}	4.1^{K}	4.0^{K}	4.1^{K}	(4.3)^{S}K	S^{K}	B^{K}							
2							C	C	B	A	C	3.9	4.2	(4.2)^{B}	B	4.2	A							
3									4.2	4.2	4.2	4.2	B	4.3	4.2	4.3	S	3.5						
4								3.8	4.3	4.2	4.2	4.1	4.2	4.0	4.1	(4.3)^{A}	A	A						
5								4.2	4.3	4.2	4.2	4.2	4.3	4.3	4.2	4.4	4.5							
6								4.2	3.8	4.2	A	B	B	4.2	4.2	4.3	4.2							
7								3.6	(4.1)^{S}	3.9	3.9	4.1	4.2	4.3	4.2	4.1	4.4							
8								3.4	A	4.2	4.1	4.3	4.4	4.3	(4.4)^{B}	4.2	A	A						
9								(4.6)^{S}	(4.2)^{S}	A	4.2	A	A	(4.2)^{B}	4.2	4.3	B	A						
10								3.5	4.1	4.3	A	4.1	4.3	4.2	4.5	4.2	4.3							
11								4.2	(4.3)^{S}	S	4.2	B	B	B	(4.5)^{S}	4.2	4.2							
12								3.3	4.3	4.1	B	4.2	B	(4.2)^{B}	4.4	4.6	(4.0)^{S}	S						
13								A	A	A	A	A	(4.4)^{B}	B	B	4.4	4.1							
14								A	(4.0)^{B}	4.1	M	(4.2)^{B}	3.9	S	4.0	4.1	S							
15								A	A	A	A	(4.1)^{A}	A	A	A	A	4.4	A						
16									A	C	C	4.2	4.2	(4.4)^{S}	4.4	4.4	B							
17								3.7	4.1	4.2	3.8	4.1	(4.4)^{B}	4.1	(4.0)^{B}	4.3	(4.4)^{B}							
18								3.3	4.2	4.2	4.2	4.1	4.1	(4.3)^{B}	B	B	B	B						
19									B	B	B	B	B	B	B	B	B	B						
20									3.9	4.3	4.1	B	A	4.2	(4.3)^{S}	4.2	B							
21							C	C	C	A	B	4.2	4.4	A	4.2	4.3	4.1							
22								A	A	B	4.3	4.4	4.2	4.4	C	S	4.4							
23									(4.1)^{S}	4.1	4.1	4.2	C	C	4.2	(4.4)^{S}	C							
24									(4.5)^{B}	4.4	B	4.3	B	B	B	(4.3)^{S}	3.9	B						
25									3.4	4.1	4.3	4.0	4.2	M	B	4.4	4.2							
26									4.2	4.4	B	B	4.0	(4.1)^{P}	4.3	4.4	3.9	S						
27									3.9	4.0	4.6	B	B	B	A	4.3	4.3	A						
28									(3.8)^{A}	4.3	4.2	3.9	4.2	4.3	4.3	4.2	A	A						
29										3.9	4.3	4.3	4.2	4.3	4.3	B	B	B						
30										4.2	4.4	B	B	C	4.3	(4.3)^{B}	4.0							
31																								
Median								3.8	4.1	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.2	—						
Count								12	19	21	18	21	18	19	21	24	16	1						

Sweep 1.0 Mc to 25.0 Mc in 0.25 min

Manual ☐ Automatic ☒

U S GOVERNMENT PRINTING OFFICE 1946 O - 703519

Table 47

Ionospheric Storminess at Washington, D. C.

November 1949

Day	Ionospheric character* 00-12 GCT	Ionospheric character* 12-24 GCT	Principal storms Beginning GCT	Principal storms End GCT	Geomagnetic character** 00-12 GCT	Geomagnetic character** 12-24 GCT
1	1	5	1400	----	2	4
2	1	1	----	0200	4	3
3	1	1			3	2
4	1	2			2	1
5	2	1			3	3
6	0	1			2	1
7	1	2			1	1
8	1	1			0	0
9	2	1			2	2
10	1	1			2	3
11	2	1			4	2
12	1	1			3	3
13	2	0			3	1
14	1	0			2	2
15	2	2			2	2
16	2	2			3	1
17	1	2			0	1
18	2	2			1	3
19	1	2			3	4
20	3	1			4	2
21	***	2			2	2
22	1	2			1	1
23	2	2			2	2
24	2	2			2	0
25	2	1			1	1
26	1	2			0	2
27	2	1			3	2
28	2	2			2	1
29	2	2	2300	----	4	3
30	4	2	----	1100	4	4

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

***No readable record. Refer to table 36 for detailed explanation.

----Dashes indicate continuing storm.

Table 48

Sudden Ionosphere Disturbances Observed at Washington, D. C.

November 1949

1949 Day	GCT Beginning	End	Location of transmitters	Relative intensity at minimum*	Other phenomena
November					
1	1642	1720	Ohio, D. C., England	0.1	Solar flare*** 1650
1	1824	1945	Ohio, New Brunswick	0.2	
5	1151	1205	England	0.3	
5	1830	1905	Ohio, D. C., England, New Brunswick	0.0	Terr.mag.pulse** 1829-1850
6	1451	****	Ohio, D. C.	0.01	
6	1639	1700	Ohio, D. C., Canal Zone	0.1	
11	1520	1600	Ohio, D. C., England, New Brunswick	0.01	
17	1131	1215	England	0.1	
18	1130	1150	England	0.3	
18	1606	1620	Ohio, England	0.1	
19	1032	1100	England	0.0	
20	1555	1615	Ohio, D. C., England	0.05	Terr.mag.pulse** 1550-1600
29	1939	****	Ohio, D. C.	0.1	Solar flare***
29	2100	2150	Ohio, D. C.	0.2	1932

*Ratio of received field intensity during SID to average field intensity before and after, for station KQ2XAU (formerly W8XAL), 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GIH, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on November 5 at 1151, on November 17 at 1131, on November 18 at 1130, and on November 19 at 1032.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

***Time of observation at McMath-Hulbert Observatory, Michigan.

****Incomplete recovery of SID.

Table 49

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,

Cable and Wireless, Ltd., as Observed in England

1949 Day	GCT Beginning	End	Receiving station	Location of transmitters
October				
15	1100	1150	Brentwood	Canary Is., Chile, Palestine, Southern Rhodesia, Spain, Uruguay, Yugoslavia, Zanzibar
22	1400	1445	Brentwood	Canary Is., Chile, Greece, Spain, Thailand, Uruguay, Venezuela
22	1400	1420	Somerton	Argentina, Brazil, Gold Coast, Union of S. Africa
23	1113	1130	Brentwood	Afghanistan, Austria, Bahrein I., India, Iran, Palestine, Spain, Switzerland, Turkey, U.S.S.R., Yugoslavia
23	1112	1155	Somerton	Union of S. Africa
28	0815	0845	Brentwood	Belgian Congo, Canary Is., Eritrea, French Equatorial Africa, Greece, India, Iran, Kenya, Madagascar, Southern Rhodesia, Spain, Trans-Jordan, Zanzibar
28	0813	0900	Somerton	Aden, Ceylon, India, Union of S. Africa
29	1058	1120	Brentwood	Barbados, India, Kenya, Southern Rhodesia, Switzerland, Zanzibar
November				
5	1158	1210	Brentwood	Austria, Belgian Congo, Bulgaria, Canary Is., Greece, Iran, Kenya, Madagascar, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Zanzibar
17	0943	0955	Brentwood	Belgian Congo, Canary Is., Eritrea, Greece, India, Iran, Kenya, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Thailand, Trans-Jordan, Zanzibar
17	0942	1010	Somerton	Aden, Argentina, Brazil, Ceylon, Gold Coast, India, Union of S. Africa
17	1135	1200	Brentwood	Afghanistan, Bahrein I., Barbados, Belgian Congo, Canary Is., Greece, India, Iran, Kenya, Madagascar, Malta, Palestine, Portugal, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Uruguay, U.S.S.R., Zanzibar
17	1133	1215	Somerton	Aden, Argentina, Brazil, Ceylon, Gold Coast, Union of S. Africa
19	1030	1115	Brentwood	Austria, Bahrein I., Barbados, Belgian Congo, Canary Is., Eritrea, Greece, India, Iran, Kenya, Malta, Portugal, Southern Rhodesia, Spain, Syria, Switzerland, Trans-Jordan, Turkey, U.S.S.R., Yugoslavia, Zanzibar
19	1030	1100	Somerton	Aden, Argentina, Australia, Brazil, Ceylon, China, Egypt, Gold Coast, India, New York, Union of S. Africa

Table 50

Sudden Ionosphere Disturbances Reported by International Telephone and Telegraph Corporation, as Observed at Platanos, Argentina

1949 Day	GCT Beginning	GCT End	Location of transmitters	Other phenomena
September				
5	1232	1250	Brazil, Denmark, Germany, Netherlands, New York	Terr.mag. pulse* 1231-1233
12	1315	1345	Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, New York, Peru, Switzerland, Venezuela	Terr.mag. pulse* 1314-1320 Solar flare** 1330
12	1520	1545	Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, New York, Peru, Switzerland, Venezuela	
13	1305	1350	Bolivia, Brazil, Chile, Cuba, Denmark, England, New York, Peru, Switzerland, Venezuela	Terr.mag. pulse* 1305-1330
15	1518	1640	Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, New York, Switzerland, Venezuela	
17	1722	1800	Bolivia, Brazil, Chile, Cuba, Denmark, England, France, Germany, Netherlands, New York, Peru, Spain, Venezuela	Terr.mag. pulse* 1718-1735 Solar flare*** 1717
October				
1	1715	1730	Bolivia, Brazil, Denmark, England, Germany, Netherlands, New York, Peru, Spain, Venezuela	Terr.mag. pulse* 1709-1725
2	1408	1435	Bolivia, Brazil, Chile, Colombia, Cuba, England, Germany, New York, Peru, Switzerland, Venezuela	Terr.mag. pulse* 1402-1425
8	1315	1345	Bolivia, Brazil, Chile, Cuba, Germany, New York, Peru, Switzerland, Venezuela	

Table 50 (continued)

1949 Day	GCT Beginning	End	Location of transmitters	Other phenomena
October				
11	1519	1630	Belgium, Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, New York, Peru, Spain, Switzerland, Venezuela	
13	1158	1431	Belgium, Bolivia, Brazil, Chile, Colombia, Cuba, Denmark, Germany, Netherlands, New York, Peru, Venezuela	
15	1512	1625	Belgium, Bolivia, Brazil, Chile, Cuba, Denmark, France, Germany, Netherlands, New York, Peru, Spain, Switzerland, Venezuela	
15	1640	1725	Belgium, Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, Netherlands, New York, Peru, Spain, Venezuela	
22	1355	1445	Bolivia, Brazil, Chile, Cuba, Denmark, Germany, New York, Peru, Switzerland, Venezuela	
November				
5	1833	1840	Bolivia, Brazil, Chile, Cuba, Denmark, England, France, Germany, Netherlands, New York, Peru, Spain, Venezuela	Terr.mag. pulse* 1829-1850
17	1137	1220	Belgium, Brazil, Cuba, Denmark, Germany, Netherlands, New York, Venezuela	
19	1036	1105	Brazil, Denmark, Germany	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at Meudon Observatory, France.

***Time of observation at McMath-Hulbert Observatory, Michigan.

Table 51

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.,

as Observed at Riverhead, New York.

1949 Day	GCT Beginning	GCT End	Location of transmitters
November 19	1035	1100	Argentina, Canada, England, Italy, Morocco

Table 52

Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.,

as Observed at Point Reyes, California

1949 Day	GCT Beginning	GCT End	Location of transmitters
November 6-7	2348	0000	Australia, China, Hawaii, Japan, Java, Philippine Is.

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 53

Provisional Radio Propagation Quality Figures
(Including Comparisons with CRPL Warnings and CRPL Probable Disturbed Period Forecasts)
October 1949

Day	North Atlantic: Quality figure 01-12 GCT	North Atlantic: Quality figure 13-24 GCT	North Atlantic: CRPL* Warning 01-12 GCT	North Atlantic: CRPL* Warning 13-24 GCT	North Atlantic: CRPL Forecast of probable disturbed periods	North Atlantic: Geomagnetic K_{Ch} 01-12 GCT	North Atlantic: Geomagnetic K_{Ch} 13-24 GCT	North Pacific: Quality figure 01-12 GCT	North Pacific: Quality figure 13-24 GCT	North Pacific: CRPL* Warning 01-12 GCT	North Pacific: CRPL* Warning 13-24 GCT	North Pacific: CRPL Forecast of probable disturbed periods	North Pacific: Geomagnetic K_{Ch} 01-12 GCT	North Pacific: Geomagnetic K_{Ch} 13-24 GCT
1	6	6				2	2	6	6				2	2
2	7	5				2	1	6	7				2	1
3	7	6				1	1	6	7				1	1
4	7	6				3	3	6	5				3	3
5	5	6				3	2	6	6				3	2
6	6	6				2	3	6	7				2	3
7	5	5		X		4	5	5	5		X		4	5
8	(3)	(4)	X	X	X	4	3	(4)	5	X	X	X	4	3
9	(4)	5	X	X	X	3	2	6	5	X	X	X	3	2
10	5	6			X	1	2	6	7			X	1	2
11	6	5				2	3	7	7				2	3
12	7	6				2	1	7	7				2	1
13	7	6				1	3	7	7				1	3
14	6	(4)	X	X		4	6	5	5	X	X		4	6
15	(3)	(2)	X	X	X	6	6	5	5	X	X	X	6	6
16	(3)	(3)	X	X	X	6	3	(4)	5	X	X	X	6	3
17	5	5	X			3	2	6	6	X			3	2
18	6	5				2	1	6	5				2	1
19	6	6				2	2	5	6				2	2
20	6	6				2	3	6	6				2	3
21	6	6				2	1	6	7				2	1
22	7	7				2	2	6	6				2	2
23	7	6				2	3	6	6				2	3
24	6	6				3	1	6	6				3	1
25	6	6				2	0	6	7				2	0
26	7	6				1	1	6	7				1	1
27	7	5				2	4	6	6				2	4
28	(4)	5	X	X		4	2	6	6	X	X		4	2
29	5	6	X			3	2	6	6	X			3	2
30	6	6				2	2	5	6				2	2
31	6	6				3	1	6	7				3	1
Score:														
H			6		4					2		2		
M			0		2					0		0		
G			22		24					22		26		
(S)			3		0					4		2		
S			0		1					3		1		

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast.

Quality Figure Scale:
- 1 - Useless
- 2 - Very poor
- 3 - Poor
- 4 - Poor to fair
- 5 - Fair
- 6 - Fair to good
- 7 - Good
- 8 - Very good
- 9 - Excellent

Symbols:
- X Warning given or probable disturbed date
- H Quality 4 or worse on day or half day of warning
- M Quality 4 or worse on day or half day of no warning
- G Quality 5 or better on day of no warning
- (S) Quality 5 on day of warning
- S Quality 6 or better on day of warning
- ( ) Quality 4 or worse (disturbed)

Geomagnetic K_{Ch} on the standard scale of 0 to 9, 9 representing the greatest disturbance.

Table 54a

Coronal observations at Climax, Colorado (5303A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Nov. 1.7	-	-	-	-	2	2	3	5	10	10	11	12	14	29	35	33	23	20	20	22	21	19	17	15	14	12	6	3	3	3	3	3	-	-	-	-	-
2.7	-	-	-	2	2	3	4	5	5	6	12	13	16	30	35	28	24	22	25	28	25	24	20	15	14	13	9	8	7	3	2	-	-	-	-	-	-
3.7	-	-	-	-	2	2	3	4	4	5	9	11	13	16	17	17	11	11	14	17	20	20	20	13	12	12	8	4	2	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	2	2	2	3	10	13	14	15	15	10	9	13	15	15	14	14	13	9	9	8	7	4	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	2	2	2	2	2	10	15	14	14	13	11	10	10	13	17	17	14	11	9	4	3	2	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	5	5	10	13	16	16	18	12	10	12	13	13	14	13	12	10	8	4	3	2	-	-	-	-	-	-	-	-
7.6	-	-	-	-	2	2	2	2	3	3	3	3	9	13	24	25	22	27	34	34	30	27	26	24	22	11	5	2	2	-	-	-	-	-	-	-	-
8.7	-	-	-	-	-	-	-	-	-	2	2	5	7	8	11	15	20	19	15	17	17	13	14	12	8	2	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	2	6	10	9	12	14	20	18	19	20	16	17	18	13	10	3	2	-	-	-	-	-	X	X	X	X
12.8	-	-	-	-	-	-	-	-	-	-	-	2	7	11	18	25	25	21	20	20	19	16	15	14	13	10	7	2	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	3	3	4	12	13	18	19	22	20	17	16	15	13	12	9	8	6	4	2	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	1	2	3	6	12	27	24	22	22	25	18	15	10	9	9	8	7	4	3	2	2	2	2	-	-	-	-	-
15.9	-	-	-	-	-	-	-	-	-	3	3	3	5	10	13	18	15	12	13	16	12	8	8	6	4	-	-	-	-	-	-	-	-	-	-	-	-
16.9	-	-	-	-	-	-	-	-	-	-	3	4	5	9	11	12	10	10	10	11	12	8	7	8	5	3	2	-	-	-	-	-	-	-	X	X	X
17.8	-	-	-	-	-	-	-	2	3	5	5	6	7	8	13	14	15	14	14	15	16	11	11	10	4	-	-	-	-	-	-	-	-	-	-	-	-
*19.7	-	-	-	-	-	-	-	-	3	7	10	10	12	17	20	19	19	21	21	15	17	17	14	14	13	9	7	7	5	4	4	8	9	9	3	-	-
20.7	-	-	-	-	-	-	-	1	2	5	6	7	14	17	26	23	22	22	24	15	19	15	13	13	14	14	7	5	4	4	3	6	7	7	6	-	-
21.7	-	-	-	-	-	-	-	-	3	3	4	5	9	14	15	18	18	16	16	15	13	12	10	10	10	9	3	2	2	1	2	4	7	8	3	-	-
22.8	-	-	-	-	-	-	-	2	3	4	7	10	14	14	23	28	28	28	17	15	13	13	10	9	9	6	2	2	2	2	3	3	4	4	-	-	-
25.7	-	-	-	-	-	-	-	-	1	9	11	22	30	26	23	22	25	18	14	7	5	4	8	9	6	8	8	4	4	4	3	3	3	-	-	-	-
26.8	-	-	-	-	-	-	-	-	2	3	10	17	17	16	17	17	17	14	10	10	8	8	8	7	7	8	8	8	3	2	-	-	-	-	-	-	-
27.7	-	-	-	-	-	-	-	-	-	3	11	13	15	14	15	15	14	13	12	10	10	9	7	6	3	-	-	-	-	-	-	-	-	-	-	-	-
29.8	-	-	-	-	-	-	-	-	-	-	3	10	13	14	13	15	15	14	12	12	10	9	10	5	3	2	2	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	1	5	11	13	15	14	12	12	12	12	12	13	13	12	11	8	7	6	4	2	1	1	-	-	-	-	-

Table 55a

Coronal observations at Climax, Colorado (6374A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Nov. 1.7	2	2	1	1	1	-	-	-	-	-	-	-	-	2	3	4	-	2	10	14	11	1	-	-	1	1	3	3	4	5	3	2	1	1	1	1	1
2.7	1	-	-	-	-	1	1	-	-	-	-	-	-	1	2	8	5	-	14	5	2	1	-	-	-	-	-	-	1	1	1	2	2	-	-	-	1
3.7	1	1	1	1	1	-	-	1	-	-	-	-	-	2	3	1	2	3	6	9	10	10	1	-	-	-	-	-	1	2	3	3	2	3	3	1	1
4.6	1	1	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	-	-	4	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	1	1	3	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	9	-	1	4	1	1	-	-	1	1	-	1	1	1	1	1	1	1	-	1	1
7.6	2	2	2	2	1	-	-	-	-	1	1	2	2	1	1	12	11	11	5	8	15	16	3	2	2	1	1	1	1	1	1	1	2	3	3	1	1
8.7	2	1	1	1	-	-	-	-	-	-	-	-	1	1	1	1	10	12	1	1	1	11	10	5	2	1	1	-	-	-	-	-	-	-	-	-	-
9.6	1	1	1	1	1	1	-	1	1	1	1	1	1	-	-	5	7	13	1	1	10	8	8	4	1	1	1	-	-	-	-	-	-	X	X	X	X
12.8	1	1	1	1	1	2	3	3	3	3	3	5	6	4	7	13	11	11	-	8	8	-	-	1	-	1	1	1	1	1	1	1	1	1	1	1	1
13.6	2	2	2	2	2	3	3	3	2	2	2	-	-	-	9	11	13	14	10	8	8	1	-	2	2	1	1	1	1	1	1	1	1	1	1	1	1
14.7	3	3	3	2	5	7	8	2	1	1	1	1	1	6	11	10	15	15	13	12	11	9	2	-	-	1	1	1	1	1	1	1	2	2	2	2	2
15.9	3	3	3	4	4	4	4	3	1	-	-	-	-	1	8	8	16	5	5	7	8	4	1	-	1	1	1	1	1	1	-	-	-	-	-	-	-
16.9	-	-	-	-	1	2	2	-	-	-	-	-	2	5	10	8	2	2	1	1	3	2	1	-	-	-	-	-	-	-	-	-	-	-	X	X	X
17.8	3	3	3	4	5	4	3	1	-	-	-	-	-	1	2	3	14	10	-	-	10	-	1	7	5	1	-	-	-	-	-	1	1	1	1	1	1
*19.7	1	1	2	3	3	3	2	2	1	-	4	3	6	2	5	16	13	5	1	1	2	2	1	1	1	5	-	-	-	-	-	1	1	1	1	2	2
20.7	1	1	1	2	2	2	2	2	2	1	-	3	5	7	10	18	11	5	9	-	4	3	1	-	1	2	-	-	-	-	-	-	1	1	1	1	1
21.7	1	1	1	2	2	2	1	2	2	2	2	-	3	11	8	13	13	10	11	6	6	3	-	-	-	3	1	-	-	-	-	-	1	1	1	1	1
22.8	2	2	2	3	3	3	3	3	3	2	1	-	2	2	12	11	12	11	12	10	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	1	1	-	1	1	1	1	1	1	2	1	12	13	12	1	14	14	11	7	1	1	-	-	1	1	1	-	-	-	1	1	2	2	2	2	1	1
26.8	1	1	1	1	1	1	1	1	1	1	1	10	8	9	9	9	12	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.7	-	-	-	-	-	-	-	-	-	-	-	10	10	10	11	9	10	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.8	-	-	-	1	1	1	1	1	1	1	1	1	1	5	7	12	8	3	3	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	3	2	1	1	1	1	-	2	3	4	5	2	2	9	9	12	1	3	1	1	2	2	1	-	-	-	-	-	-	1	1	1	1	2	2	2	-

Table 54b

Coronal observations at Climax, Colorado (5303A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Nov. 1.7	-	-	-	-	-	-	2	2	2	3	5	7	10	11	12	18	25	30	20	15	20	18	13	10	3	3	2	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	2	2	4	5	5	6	6	6	7	9	10	13	20	17	14	13	12	11	10	8	4	2	-	-	-	-	-	-	-	-	-	-	-
3.7	-	-	-	-	2	2	3	3	3	3	2	2	-	2	5	7	11	12	11	12	11	12	12	10	8	9	7	3	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	2	2	2	3	3	2	-	-	4	9	11	16	15	14	14	14	15	13	12	10	11	8	2	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	2	3	3	2	2	2	4	4	4	5	10	10	14	14	14	13	13	11	11	10	9	7	3	3	2	-	-	-	-	-	-	-	-
6.7	-	-	-	2	2	3	3	3	3	4	8	11	12	11	8	13	14	15	15	22	24	16	18	17	11	9	4	4	4	2	-	-	-	-	-	-	-
7.6	-	-	-	-	2	2	2	2	2	2	3	4	12	14	13	12	12	15	19	19	20	26	26	22	20	13	7	4	3	3	2	2	-	-	-	-	-
8.7	-	-	-	-	-	-	-	-	-	-	2	3	3	10	9	10	13	14	17	18	18	16	15	15	15	13	10	5	3	2	2	-	-	-	-	-	-
9.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	7	8	10	10	9	12	10	9	10	10	9	8	4	-	-	-	-	-	-	-	-	-	-
12.8	-	-	-	-	-	-	-	2	2	2	3	4	5	5	6	9	9	8	9	11	12	13	15	16	23	24	23	13	3	1	-	-	-	-	-	-	-
13.6	-	-	-	-	-	2	2	3	3	4	4	7	8	10	12	11	12	13	13	14	17	17	20	27	25	23	23	10	2	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	2	2	2	3	5	9	11	13	15	17	18	16	17	18	18	29	29	27	23	18	12	2	-	-	-	-	-	-	-	-
15.9	-	-	-	-	-	-	-	2	2	3	5	7	10	11	12	14	25	23	15	15	15	16	30	30	29	20	13	11	2	-	-	-	-	-	-	-	-
16.9a	X	X	X	X	X	-	-	-	-	3	4	5	7	11	13	14	14	15	12	11	14	17	16	15	13	10	5	2	-	-	-	-	-	-	-	-	-
17.8	-	-	-	-	-	-	-	2	2	3	5	9	10	12	13	15	12	14	14	14	15	16	18	16	17	14	10	4	2	-	-	-	-	-	-	-	-
•19.7	-	-	-	-	-	-	-	2	2	3	5	9	10	12	15	17	22	21	20	22	22	21	22	31	25	21	2	3	3	3	2	2	1	1	1	1	-
20.7	-	-	-	-	-	-	-	-	2	3	4	6	11	10	16	15	25	22	22	26	25	25	24	18	14	9	4	2	1	1	1	1	-	-	-	-	-
21.7	-	-	-	-	-	-	-	-	-	2	4	7	9	10	11	12	15	21	20	25	35	33	22	21	12	3	1	3	2	2	2	2	-	-	-	-	-
22.8	-	-	-	-	-	-	-	-	-	-	2	4	10	12	13	9	13	14	13	14	29	25	17	10	6	2	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	3	5	10	11	13	14	15	20	20	19	17	16	12	9	3	-	-	-	-	-	-	-	-	-	-	-	-
26.8	-	-	-	-	-	-	-	-	-	-	-	-	3	5	10	11	13	15	15	18	14	13	13	12	7	2	-	-	-	-	-	-	-	-	-	-	-
27.7	-	-	-	-	-	-	-	-	-	-	-	3	2	2	4	10	12	13	13	16	15	15	14	13	8	2	1	-	-	-	-	-	-	-	-	-	-
29.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	6	7	7	7	8	8	8	8	7	5	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	1	1	1	1	2	3	5	10	15	16	15	14	13	13	13	14	13	12	9	8	8	7	3	1	-	-	-	-	-	-	-

Table 55b

Coronal observations at Climax, Colorado (6374A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Nov. 1.7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11	12	12	10	7	-	-	-	5	3	1	1	2	2	3	3	3	3	2	2	1	2
2.7	1	1	1	1	1	1	1	1	1	1	1	-	-	-	1	7	12	14	13	1	1	-	1	4	5	1	1	1	2	3	4	4	3	2	2	1	1
3.7	1	1	1	1	1	1	2	1	1	1	1	1	-	2	3	3	3	4	4	3	3	3	1	1	1	1	1	-	2	2	4	5	6	5	3	2	1
4.6	-	-	-	-	-	-	-	-	-	-	-	-	1	3	5	-	1	5	-	3	2	10	-	-	-	1	1	1	2	2	2	2	2	2	2	1	1
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	4	2	3	-	8	6	7	7	1	-	-	1	1	1	2	3	3	5	5	-	-	-
6.7	1	-	-	-	-	-	-	-	-	-	-	-	2	2	3	10	5	4	3	9	8	9	9	10	6	1	-	-	-	-	2	3	3	2	1	1	1
7.6	1	1	1	1	1	-	-	1	1	-	-	-	-	-	-	1	3	6	9	9	9	11	13	13	8	1	1	1	1	1	3	4	4	4	3	2	2
8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	2	3	4	5	5	4	4	6	5	-	-	-	-	-	1	1	3	3	2	2
9.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1	1	1	1	1	2	1	1	1	4	-	-	-	-	-	-	3	3	3	2	2	1
12.8	1	1	1	1	1	1	1	2	2	2	1	-	-	1	1	1	1	-	1	1	5	-	1	10	14	14	1	-	-	1	1	2	2	2	2	1	1
13.6	1	1	1	1	2	2	2	2	3	4	2	1	2	2	1	-	-	4	4	5	5	2	3	13	14	13	11	-	-	1	1	2	2	2	2	2	2
14.7	2	2	2	3	3	3	4	8	8	9	2	3	2	1	1	2	11	12	14	13	10	8	12	14	4	6	1	4	3	3	4	4	3	3	3	3	3
15.9	-	-	-	-	1	1	1	1	1	1	-	-	-	-	1	1	10	12	11	10	12	-	9	10	12	10	3	2	3	3	4	3	3	2	2	2	3
16.9a	X	X	X	X	X	1	1	1	-	-	-	-	-	-	-	-	1	4	4	5	1	1	2	8	7	2	1	1	1	1	1	1	-	-	-	-	-
17.8	1	1	1	1	1	1	1	2	2	2	1	1	1	-	-	1	1	1	2	-	-	1	2	5	5	5	1	-	-	2	3	3	2	2	2	3	3
•19.7	2	1	1	1	1	2	2	2	2	2	1	1	-	-	1	1	4	5	14	-	4	-	1	2	-	-	1	2	2	3	3	2	2	2	1	1	1
20.7	1	1	1	1	1	1	2	2	2	1	1	1	1	1	-	-	13	9	10	-	9	13	1	-	-	1	1	-	-	1	1	1	1	1	1	1	1
21.7	1	1	1	1	-	-	1	2	2	2	-	-	1	1	2	1	1	5	14	10	13	12	5	3	1	1	1	1	-	-	1	2	3	1	1	1	1
22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	5	-	4	10	15	14	10	4	1	-	-	-	-	-	-	2	3	3	2	1	2
25.7	1	1	1	1	1	1	1	3	3	2	2	1	-	-	3	4	-	-	10	2	10	9	10	9	13	7	3	5	2	1	1	1	1	1	1	1	1
26.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	2	5	2	10	4	10	11	11	3	1	2	1	-	-	-	-	1	1	1	1	1
27.7	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	3	10	10	9	1	-	-	-	-	-	-	-	-	-	-	-	-
29.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	1	1	-	2	4	5	5	6	1	-	-	-	-	1	2	2	2	2	2	2	3	3

Table 56a

Coronal observations at Climax, Colorado (6704A), east limb

Date	Degrees north of the solar equator																		0°	Degrees south of the solar equator																	
GCT	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Nov. 1.7	-	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	-	-	-	1	1	2	2	2	3	2	2	2	1	1	1	1	1	2	1	1	1	1	1	-	-	-	-	-	-	-	-
3.7	-	-	-	-	-	-	-	1	1	1	1	1	1	2	2	2	2	1	1	1	2	2	2	1	1	1	1	1	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	1	1	1	1	-	-	1	2	2	2	2	2	2	2	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	3	3	3	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	X	X	X	X
12.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.9	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X
17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
*19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
20.7	-	-	-	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
22.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.8	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.7	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.8	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-

Table 56b

Coronal observations at Climax, Colorado (6704A), west limb

Date GCT	Degrees south of the solar equator																		0°	Degrees north of the solar equator																	
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
1949																																					
Nov. 1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
7.6	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-
9.6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
12.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-
13.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-
14.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	2	3	3	3	2	1	-	-	-	-	-	-	-	-	-	-
15.9	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	2	2	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-
16.9a	X	X	X	X	X	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
17.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-
*19.7	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	2	3	3	3	3	3	3	2	1	-	-	-	-	-	-	-	-	-	-	-
20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	2	3	3	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	2	2	2	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29.8a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Intensity of yellow line (5694A) on November 19.7, west limb: 1 at south 30°; 1 at south 5°; 1 at 0°; 1 at north 5°; not visible at other position angles.

Table 57

American and Zürich Provisional Relative Sunspot Numbers

November 1949

Date	R_A*	R_Z**	Date	R_A*	R_Z**
1	137	120	17	204	167
2	136	130	18	216	172
3	153	97	19	214	147
4	166	120	20	191	124
5	179	135	21	184	161
6	193	116	22	161	138
7	205	118	23	173	118
8	215	130	24	226	156
9	235	157	25	211	143
10	192	125	26	148	153
11	201	125	27	208	170
12	202	133	28	209	152
13	194	129	29	225	199
14	173	80	30	206	197
15	180	124			
16	190	133	Mean:	190.9	139.0

*Combination of reports from 44 observers; see page 9.

**Dependent on observations at Zürich Observatory and its stations at Locarno and Arosa.

Table 58

Mean K-indices from 31 Observatories for January to March 1949

V a l u e s K_W

Day	Jan	Sum	Feb	Sum	Mar	Sum
1	2.1 2.6 2.7 2.0 2.1 2.7 2.7 3.5	20.4	0.7 0.5 1.0 1.2 1.9 0.5 0.3 0.8	6.9	1.9 1.4 1.7 3.4 3.7 3.5 3.4 2.7	21.7
2	4.3 5.2 3.4 4.2 4.6 3.3 3.6 2.5	31.1	0.9 0.5 0.7 1.5 1.9 0.9 1.5 0.9	8.8	2.6 3.1 2.8 3.7 2.3 2.6 3.5 3.7	24.3
3	1.9 1.7 1.0 0.4 0.5 0.5 2.0 1.4	9.4	1.8 0.8 0.9 1.6 2.3 1.7 4.1 4.4	17.6	3.3 2.5 2.5 2.8 2.6 4.6 3.0 2.3	23.6
4	1.4 0.4 0.6 0.9 1.8 1.1 1.0 0.8	8.0	5.0 4.3 3.4 3.0 2.5 1.5 0.7 1.0	21.4	2.5 1.1 2.0 2.4 1.9 2.2 1.7 2.1	15.9
5	1.2 1.7 0.5 0.5 0.8 0.7 0.9 1.7	8.0	1.4 0.8 1.6 1.0 2.4 2.4 1.9 2.2	13.7	2.6 3.5 2.0 1.5 0.7 0.8 1.4 2.0	14.5
6	1.0 1.5 1.7 2.0 1.0 1.9 1.4 3.5	14.0	2.2 1.0 1.5 3.5 3.8 4.3 4.5 3.8	24.6	0.8 0.5 0.7 1.0 1.2 0.5 0.8 0.4	5.9
7	3.0 3.5 2.8 1.6 0.6 1.6 2.4 3.8	19.3	4.0 4.2 3.0 3.4 2.1 1.2 1.3 1.2	20.4	1.4 0.5 1.0 1.8 1.2 2.1 1.1 1.3	10.4
8	2.3 1.0 1.0 2.5 2.2 3.3 2.9 2.7	17.9	1.0 0.4 0.3 1.3 0.8 2.5 0.7 0.4	7.4	1.6 0.8 1.3 1.1 2.0 2.0 1.5 2.4	12.7
9	2.0 2.2 2.1 2.8 3.0 2.9 3.9 2.9	21.8	0.6 0.5 1.0 1.5 1.5 0.7 0.5 0.5	6.8	2.9 2.6 1.5 2.1 4.4 4.6 3.1 2.1	23.3
10	2.0 2.0 2.5 2.0 2.8 3.1 2.7 4.1	21.2	1.9 0.7 0.9 0.8 0.9 1.8 2.6 2.0	11.6	0.7 0.6 0.5 0.7 0.5 1.3 2.2 0.7	7.2
11	1.2 2.1 2.3 2.4 2.3 1.5 3.1 3.9	18.8	2.2 2.1 3.6 3.1 2.8 2.0 3.2 3.9	22.9	0.7 0.5 1.1 1.0 1.1 1.3 0.4 0.6	6.7
12	3.1 1.7 1.8 1.7 1.3 3.6 4.3 3.8	21.3	2.5 2.8 3.0 2.5 2.5 2.5 2.5 2.5	20.8	1.1 0.7 1.5 2.0 2.2 2.7 1.8 3.5	15.5
13	4.2 2.2 2.8 2.5 1.9 1.1 2.5 1.3	18.5	3.5 2.9 1.9 2.6 2.1 1.6 1.8 3.3	19.7	3.7 2.9 2.8 3.1 3.3 3.4 3.5 3.9	26.6
14	1.0 0.5 1.1 2.1 1.3 1.0 2.0 2.3	11.3	3.1 2.6 2.6 1.9 1.7 1.4 1.1 3.2	17.6	4.4 3.8 3.2 3.9 3.6 4.1 4.3 3.3	30.6
15	0.6 0.5 0.8 1.7 1.5 0.7 0.6 2.4	8.8	1.9 1.7 1.2 2.2 3.0 3.6 3.2 2.5	19.3	3.9 1.6 1.9 3.6 3.3 2.9 3.2 2.6	23.0
16	2.1 1.5 0.9 2.2 2.3 1.8 2.2 1.5	14.5	2.5 1.9 2.3 1.6 1.9 0.6 0.9 2.9	14.6	2.2 1.5 1.4 1.5 1.9 6.7 5.0 3.6	23.8
17	3.1 1.1 1.5 2.0 1.5 1.4 1.1 1.3	13.0	2.7 2.5 2.9 3.0 4.9 4.5 3.3 3.7	27.5	3.6 3.0 2.6 3.1 2.8 4.1 4.7 5.2	29.1
18	1.9 3.1 1.6 3.0 2.6 3.4 3.8 4.0	23.4	3.4 3.0 3.1 2.8 2.9 2.1 3.6 3.4	24.3	5.2 3.4 3.4 3.0 3.1 3.3 4.0 2.5	27.9
19	3.8 2.9 2.2 2.3 2.4 2.3 2.7 2.5	21.1	2.4 1.6 1.7 1.9 1.4 1.3 0.9 0.6	11.8	1.8 1.5 1.6 2.4 1.9 2.5 1.8 3.2	16.7
20	1.6 1.3 1.6 1.7 2.1 1.8 1.1 1.3	12.5	0.4 0.4 0.8 1.3 2.3 3.1 3.2 2.5	14.0	1.1 2.4 2.2 2.1 2.1 2.9 3.0 2.4	18.2
21	1.5 2.4 1.8 1.9 1.4 1.8 1.9 3.5	16.2	2.9 2.3 1.9 2.2 2.8 4.7 3.3 4.3	24.4	2.7 2.3 1.9 2.2 2.4 2.5 3.0 5.5	22.5
22	2.8 2.5 3.0 2.7 2.4 1.4 0.9 1.1	16.8	5.1 4.9 4.1 3.6 3.0 3.1 4.2 3.8	31.8	5.7 6.4 5.0 5.0 3.7 4.8 4.6 3.0	38.2
23	0.8 0.9 0.8 1.9 2.0 2.8 3.1 3.4	15.7	2.5 0.8 0.9 2.5 3.5 3.0 1.7 2.2	17.1	3.5 5.2 4.8 4.0 3.4 4.0 1.3 1.5	27.7
24	2.5 2.1 1.2 1.1 2.3 2.8 7.2 5.7	24.9	4.5 3.1 2.8 3.2 3.7 3.5 1.2 2.8	24.8	0.5 1.5 2.2 2.0 1.7 0.8 2.2 1.1	12.0
25	7.9 6.7 5.2 3.7 4.0 5.8 7.6 7.3	48.2	1.4 0.8 1.4 1.7 1.5 0.9 0.9 0.6	9.2	0.5 2.7 1.8 2.5 2.2 1.4 0.9 3.0	15.0
26	7.1 6.3 5.5 4.7 4.5 4.8 4.7 3.6	41.2	1.1 1.4 1.4 1.4 1.4 2.8 1.0 2.9	13.4	3.3 2.9 3.2 2.4 2.9 2.2 1.8 0.8	19.5
27	3.5 3.7 2.1 1.9 2.6 2.6 3.7 1.8	21.9	2.4 3.0 3.8 3.4 2.1 1.7 1.5 1.8	19.7	0.3 0.3 0.9 1.3 1.5 0.8 0.8 1.0	6.9
28	1.7 2.0 2.0 1.5 1.5 2.0 2.0 1.4	14.1	0.7 1.3 2.2 1.3 0.8 2.8 0.8 1.2	11.1	1.4 2.2 2.7 2.5 2.6 3.0 3.5 3.8	21.7
29	2.0 1.2 1.6 1.8 1.9 1.6 1.9 1.7	13.7			3.7 1.7 2.6 3.0 2.6 2.7 2.3 2.2	20.8
30	0.9 0.7 0.8 0.4 0.5 0.4 0.7 0.8	5.2			1.4 3.0 2.1 2.8 2.0 1.5 1.1 1.4	15.3
31	0.6 0.9 1.3 1.0 1.4 1.9 2.7 1.1	10.9			2.0 1.1 1.1 1.0 0.4 0.6 0.3 0.3	6.8
Mean	2.42 2.20 1.94 2.04 2.04 2.18 2.69 2.66	2.27	2.31 1.89 2.00 2.18 2.30 2.24 2.01 2.31	2.16	2.35 2.17 2.13 2.42 2.30 2.66 2.43 2.39	2.36

Table 58 (continued)

Mean K-indices from 33 Observatories for April and May, and 32 for June 1949

Values K_W

Day	Apr								Sum	May								Sum	Jun								Sum
1	0.3	0.6	1.1	1.5	1.5	1.6	2.5	2.3	11.4	0.4	0.5	0.6	0.5	0.8	2.1	2.1	1.9	8.9	3.5	3.4	2.7	2.3	2.1	1.3	0.9	2.6	18.8
2	2.9	0.7	1.0	1.4	1.3	1.0	1.3	1.1	10.7	2.2	2.0	0.7	0.6	2.0	3.4	2.6	2.0	15.5	2.2	1.2	3.1	2.9	2.5	2.1	1.8	1.9	17.7
3	1.2	1.4	2.5	2.3	2.9	3.0	1.0	0.7	15.0	2.6	2.3	1.2	1.7	0.6	0.8	3.5	5.8	18.5	1.9	1.2	1.6	2.3	1.5	1.0	1.0	3.9	14.4
4	0.8	0.8	2.0	2.2	2.1	1.2	1.2	1.1	11.4	5.2	4.0	3.1	3.3	3.5	3.5	1.9	1.0	25.5	5.2	3.8	4.8	2.6	3.4	5.2	5.2	4.8	35.0
5	0.5	1.4	1.1	2.0	1.8	1.2	0.6	1.9	10.5	0.8	1.2	1.9	2.4	2.8	3.3	3.6	4.3	20.3	3.3	4.4	4.2	3.9	4.5	4.6	4.2	5.3	34.4
6	1.8	1.5	1.2	1.5	0.8	0.9	0.7	0.9	9.3	3.8	3.3	2.4	2.2	2.0	2.9	2.7	2.3	21.6	4.3	3.9	2.1	1.6	1.6	2.1	2.3	5.0	22.9
7	1.7	0.6	0.9	2.7	2.3	3.1	4.7	6.0	22.0	2.2	2.2	1.0	1.2	1.3	2.5	2.2	2.7	15.3	3.3	3.0	2.8	2.3	2.5	1.5	2.0	1.5	18.9
8	5.5	5.2	5.0	5.5	5.7	4.7	4.4	2.5	38.5	2.4	2.0	1.3	1.7	2.3	1.8	2.4	3.5	17.4	1.6	1.5	1.8	1.8	1.5	1.4	1.8	1.3	12.7
9	1.8	2.1	2.0	2.2	2.2	1.8	1.4	3.2	16.7	2.9	1.9	2.7	2.2	2.8	4.0	2.4	1.6	20.5	2.3	1.6	2.2	2.1	1.2	1.2	2.9	2.3	15.8
10	3.6	3.3	2.9	2.6	3.0	3.8	4.5	4.3	28.0	2.0	1.4	1.7	1.5	2.7	2.5	2.4	2.8	17.0	0.9	1.2	0.7	1.9	1.4	0.9	0.6	0.3	7.9
11	3.7	2.4	3.5	3.1	4.4	4.4	3.1	2.4	27.0	4.4	3.5	2.8	2.8	2.0	1.2	1.9	1.1	19.7	0.4	0.4	0.6	0.9	1.5	2.2	2.0	1.8	9.8
12	1.1	1.8	3.1	3.2	3.8	5.3	3.3	2.8	24.4	1.6	1.8	6.0	6.1	7.6	7.9	6.8	6.1	43.9	3.4	2.8	2.9	3.2	4.2	4.2	4.2	4.2	29.1
13	4.2	4.4	2.9	3.1	3.5	2.7	3.1	2.9	26.8	6.3	6.5	2.8	1.8	4.4	2.9	1.1	1.8	27.6	4.7	2.3	2.5	3.3	2.4	2.1	1.8	2.1	21.2
14	3.0	3.7	2.9	2.9	2.3	2.4	2.5	3.2	22.9	3.2	2.5	2.6	3.2	2.8	3.1	2.1	2.8	22.3	0.8	0.9	1.2	1.7	2.3	0.8	2.2	2.6	12.5
15	3.2	2.3	2.4	1.7	1.5	1.5	1.6	2.6	16.8	2.8	2.7	1.8	1.8	1.8	0.8	0.4	0.4	12.5	2.8	2.6	2.1	2.3	2.8	3.2	3.1	1.8	20.7
16	1.7	1.8	1.8	3.2	3.2	3.5	2.2	2.9	20.3	1.1	2.8	2.9	2.7	3.2	2.6	2.0	3.5	20.8	1.9	2.0	2.1	2.3	1.7	2.5	2.1	2.7	17.3
17	3.0	1.9	2.2	2.5	2.4	1.8	1.9	3.4	19.1	3.3	2.8	2.2	1.8	1.1	1.8	1.2	0.4	14.6	1.4	0.8	0.9	1.0	1.7	1.8	2.5	3.5	13.6
18	2.5	2.1	0.8	1.2	0.7	1.5	2.7	2.0	13.5	0.3	0.8	0.7	1.2	0.8	0.7	1.5	1.3	7.3	3.8	2.2	2.3	2.6	2.5	2.7	2.3	2.4	20.8
19	1.3	1.0	1.9	1.9	1.7	0.9	1.6	2.4	12.7	1.1	0.9	0.5	0.8	1.4	2.9	1.3	0.9	9.8	2.4	2.5	1.7	2.4	2.2	2.2	1.1	0.9	15.4
20	1.3	0.8	1.3	0.7	1.0	1.0	2.2	1.6	9.9	1.1	1.1	0.9	0.8	1.2	1.0	1.1	1.0	8.2	1.0	1.5	1.8	1.7	2.2	1.9	1.9	1.5	13.5
21	1.7	1.6	0.8	0.8	1.0	0.8	1.5	1.6	9.8	0.6	0.9	2.1	2.5	2.9	2.1	1.5	1.2	13.8	0.9	1.2	1.2	2.3	2.1	1.4	1.3	1.1	11.5
22	1.2	1.1	1.4	0.9	2.0	2.0	1.2	0.8	10.6	2.9	2.5	1.4	2.2	2.3	2.3	1.9	1.7	17.2	0.6	1.4	1.2	2.6	2.9	3.5	2.6	1.6	16.4
23	0.6	1.5	1.7	1.8	1.8	2.2	2.5	1.1	13.2	1.9	1.8	2.2	1.8	2.1	1.7	1.9	2.7	16.1	1.5	1.8	1.0	1.8	1.4	1.4	0.7	0.4	10.0
24	2.6	1.8	1.7	2.3	1.5	2.0	1.2	2.1	15.2	2.3	2.3	2.7	1.5	1.2	1.3	0.9	0.7	12.9	0.5	1.2	1.5	2.1	1.8	2.2	2.5	2.1	13.9
25	2.3	1.7	1.4	1.3	1.8	1.6	0.9	1.8	12.8	0.5	0.5	1.2	3.1	2.7	2.6	1.3	0.8	12.7	3.1	2.4	3.2	3.5	3.0	2.0	1.8	0.8	19.8
26	2.5	2.0	1.4	1.6	1.8	2.1	1.3	1.5	14.2	1.0	1.2	1.5	1.8	2.0	2.7	1.4	1.0	12.6	1.1	1.5	1.3	1.7	2.8	2.3	2.1	2.6	15.4
27	3.0	3.8	2.8	2.9	2.1	1.6	1.0	0.9	18.1	0.8	0.8	0.9	2.5	2.6	1.9	1.7	1.0	12.2	2.6	2.5	1.6	1.6	1.5	1.8	1.5	1.9	15.0
28	0.7	1.4	1.9	2.1	1.1	2.2	2.3	2.0	13.7	2.5	1.8	1.5	1.5	0.6	1.4	0.7	0.4	10.4	1.3	1.1	1.8	2.1	1.7	2.5	2.0	2.8	15.3
29	2.0	1.0	0.8	0.8	1.0	4.6	4.2	2.2	16.6	0.5	0.9	0.6	0.9	1.2	0.6	0.5	0.4	5.6	2.8	2.8	2.2	2.3	1.7	2.6	3.3	2.8	20.5
30	2.3	0.9	1.1	1.4	1.3	0.5	0.7	0.2	8.4	0.4	0.8	0.8	0.9	4.0	4.3	5.3	5.4	21.9	2.0	1.8	1.6	2.1	2.4	1.9	1.4	2.1	15.3
31										4.0	4.7	2.9	3.1	3.7	3.2	3.5	3.4	28.5									
Mean	2.13	1.89	1.92	2.11	2.12	2.23	2.11	2.15	2.08	2.16	2.08	1.86	2.00	2.34	2.45	2.12	2.13	2.14	2.25	2.03	2.02	2.24	2.23	2.22	2.17	2.35	2.19

Table 58 (concluded)

Mean K-indices from 33 Observatories for July to September 1949

Values K_w

Day	Jul								Sum	Aug								Sum	Sep								Sum
1	1.9	1.9	1.7	2.1	1.0	1.1	1.5	1.6	12.8	0.5	1.0	1.4	2.1	2.0	0.9	1.8	1.5	11.2	2.2	1.4	3.2	2.8	3.2	3.7	3.5	3.4	23.4
2	1.6	1.6	1.1	0.5	0.6	0.8	0.8	0.8	7.8	1.1	1.6	3.8	3.8	4.8	3.6	1.8	2.0	22.5	3.0	3.8	3.4	1.7	2.8	3.1	3.6	3.4	24.8
3	0.7	0.8	0.6	0.9	0.9	1.4	2.0	1.2	8.5	4.6	4.9	5.9	5.5	4.1	3.4	3.0	3.5	34.9	4.1	4.6	5.1	3.5	4.0	3.4	3.2	2.2	30.1
4	0.9	0.6	0.7	0.5	0.8	1.3	0.8	0.9	6.5	5.4	5.6	5.2	3.3	4.5	3.5	4.4	3.8	35.7	3.0	2.8	2.2	2.6	2.0	1.5	3.2	2.0	19.3
5	0.4	1.1	1.0	1.5	1.6	0.5	0.5	1.3	7.9	3.5	2.8	2.3	2.7	3.5	3.7	3.5	3.2	25.2	2.8	1.8	1.8	2.4	2.0	2.6	2.5	1.9	17.8
6	0.7	1.4	0.8	0.8	1.7	0.5	1.3	1.2	8.4	2.7	1.7	0.8	3.4	1.8	1.2	2.4	2.2	16.2	1.8	1.5	2.3	3.0	2.0	1.4	0.9	1.1	14.0
7	2.5	1.1	1.2	1.7	3.5	3.3	1.2	0.8	15.3	1.2	1.1	1.2	1.4	2.8	4.0	2.5	2.9	17.1	0.6	1.2	1.9	1.8	1.8	1.3	1.7	2.0	12.3
8	1.6	1.6	1.3	2.1	1.4	3.2	3.3	2.4	16.9	5.2	5.4	3.1	3.2	3.7	1.7	1.4	1.1	24.8	1.8	1.1	2.0	3.4	2.1	2.3	2.8	2.9	18.4
9	1.3	1.8	3.1	3.1	1.9	1.2	0.7	0.4	13.5	1.6	1.5	1.2	2.4	2.6	3.1	3.1	1.8	17.3	3.0	1.4	1.2	1.6	1.2	1.4	1.0	0.8	11.6
10	0.7	1.0	0.7	0.9	1.4	1.3	1.5	0.5	8.0	1.4	2.4	2.6	2.3	2.5	3.2	1.6	3.2	19.2	0.2	0.4	0.5	0.6	1.3	1.2	1.3	2.1	7.6
11	0.3	1.4	0.7	1.1	1.2	1.5	1.8	2.1	10.1	0.6	0.8	1.0	0.8	1.5	1.3	0.9	1.5	8.4	1.8	2.4	2.3	2.4	1.8	1.5	2.2	1.9	16.[illegible]
12	0.6	0.7	0.9	1.1	2.1	1.7	3.9	2.3	13.3	1.1	0.8	1.2	1.3	1.3	1.3	1.6	0.6	9.2	2.2	2.8	3.9	3.8	4.7	3.4	3.1	2.4	26.[illegible]
13	3.5	4.2	2.9	2.7	2.8	2.9	1.2	1.1	21.3	1.6	0.7	1.6	2.1	2.4	2.5	1.8	2.9	15.6	3.3	2.8	2.3	1.8	2.3	1.5	0.8	2.2	17.[illegible]
14	0.9	1.9	2.2	1.8	2.5	1.2	1.1	1.2	12.8	4.5	3.1	3.3	3.7	4.1	3.1	3.2	4.2	29.2	1.3	1.5	1.7	2.6	4.3	3.4	1.8	1.9	[illegible]
15	0.8	0.5	0.6	0.6	0.8	1.1	0.7	0.4	5.5	4.8	4.5	3.2	2.9	2.7	2.5	2.5	3.4	26.5	2.2	1.7	1.4	1.9	2.4	3.0	2.5	2.2	17.3
16	0.5	1.1	1.5	2.2	4.3	3.5	4.2	3.3	20.6	3.2	2.2	1.9	2.5	1.7	1.7	1.1	1.0	15.3	3.0	2.7	1.8	1.6	1.8	2.3	1.8	2.[illegible]	17.0
17	2.5	1.7	3.0	3.4	3.4	3.0	1.2	1.3	19.5	1.8	2.3	1.3	2.4	3.5	3.4	2.8	2.5	20.0	0.4	0.8	1.5	1.2	1.6	1.3	2.3	2.[illegible]	11.[illegible]
18	1.6	1.3	1.5	2.8	2.7	3.1	3.0	2.8	18.8	0.8	1.0	2.2	2.9	2.8	3.1	2.3	3.1	18.2	1.8	1.0	0.6	1.9	1.1	0.6	0.5	0.9	8.4
19	3.1	3.4	2.9	3.0	3.0	2.6	1.8	2.0	21.8	3.0	2.1	1.3	2.5	2.3	2.2	1.8	2.5	17.7	0.5	0.5	0.3	0.7	0.4	0.7	0.5	0.3	3.9
20	3.4	0.9	1.1	1.7	1.9	1.9	0.9	1.0	12.8	2.5	3.1	2.4	1.6	2.5	1.5	1.7	2.0	17.3	0.3	0.4	0.3	0.5	0.8	0.6	0.6	0.8	4.3
21	0.3	1.2	1.1	2.3	2.4	1.7	1.1	1.9	12.0	1.4	1.9	1.2	1.8	1.6	1.8	2.2	2.3	14.2	0.3	0.5	0.5	0.7	1.1	0.8	0.3	2.2	6.4
22	1.0	1.4	2.0	2.3	2.6	2.7	3.3	3.3	18.6	2.0	2.1	1.5	1.8	1.8	1.6	1.0	1.1	12.9	1.6	1.3	1.7	2.4	1.7	2.1	0.8	0.4	12.0
23	3.7	3.3	2.0	2.5	3.6	1.9	2.3	2.3	21.6	0.8	1.2	1.2	1.0	0.8	0.7	0.4	0.5	6.6	1.0	1.4	1.2	1.5	1.4	0.8	0.8	1.2	9.3
24	2.6	1.9	1.6	0.7	2.6	2.5	2.0	1.7	15.6	0.6	1.2	0.6	0.9	0.8	0.8	0.4	0.5	5.8	1.1	1.6	1.8	1.4	2.2	2.4	2.5	4.4	17.4
25	2.0	2.7	3.1	1.5	1.9	1.8	2.1	2.2	17.3	0.4	0.3	0.4	0.5	0.7	0.7	0.5	0.9	4.4	4.3	3.8	2.3	3.4	2.9	4.0	4.5	3.5	28.7
26	1.9	1.3	2.5	1.1	1.0	0.9	1.2	1.2	11.1	0.8	0.4	1.2	1.5	0.6	1.2	1.4	1.2	8.3	3.5	3.1	2.8	2.7	2.3	2.3	1.9	4.0	22.6
27	1.4	0.6	0.5	0.8	0.8	1.0	1.5	0.6	7.2	1.7	2.0	2.9	2.5	2.6	2.7	2.1	1.8	18.3	3.5	2.9	3.7	3.4	4.2	2.3	2.1	2.8	24.9
28	0.4	0.6	0.6	0.8	0.9	0.9	1.6	1.2	7.0	1.8	2.3	1.3	1.8	2.0	1.5	1.3	1.2	13.2	3.8	2.7	2.9	2.0	1.3	1.2	0.5	0.7	15.1
29	0.8	1.1	1.4	1.5	2.5	1.9	1.4	0.6	11.2	0.6	1.2	1.8	1.1	1.4	1.5	2.3	3.1	13.0	1.5	1.0	1.8	1.5	2.1	0.8	2.1	1.7	12.5
30	0.7	1.5	2.2	1.7	1.3	1.2	1.9	1.1	11.6	2.6	2.7	1.5	2.1	1.9	1.6	1.3	1.1	14.8	0.6	1.5	3.1	3.0	2.5	2.5	4.5	2.6	20.[illegible]
31	1.5	1.8	1.4	1.7	1.5	2.3	1.8	1.0	13.0	2.2	1.3	1.5	0.8	1.2	2.1	2.2	2.5	13.8									
Mean	1.48	1.53	1.55	1.66	1.95	1.80	1.73	1.47	1.65	2.13	2.10	2.00	2.21	2.34	2.16	1.95	2.10	2.12	2.02	1.88	2.05	2.13	2.18	1.98	1.99	2.09	2.04

Table 59

Preliminary International Character-Figure C, 1949

Day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0.8	0.3	1.1	0.3	0.2	0.7	0.4	0.3	1.0
2	1.4	0.1	1.1	0.3	0.5	0.6	0.0	1.2	1.1
3	0.1	1.1	1.1	0.5	1.2	0.7	0.3	1.6	1.5
4	0.1	1.2	0.5	0.2	1.3	1.7	0.1	1.7	0.8
5	0.0	0.3	0.5	0.2	0.9	1.6	0.2	1.1	0.5
6	0.7	1.3	0.0	0.1	0.8	1.2	0.1	0.7	0.2
7	0.8	1.1	0.1	1.4	0.4	0.7	0.7	0.8	0.3
8	0.7	0.1	0.3	1.8	0.6	0.2	0.7	1.3	0.8
9	1.0	0.0	1.2	0.6	0.9	0.4	0.7	0.7	0.4
10	1.0	0.3	0.1	1.2	0.6	0.1	0.1	0.7	0.2
11	0.8	1.1	0.1	1.2	1.0	0.2	0.2	0.1	0.4
12	1.1	0.6	0.6	1.4	2.0	1.3	0.8	0.1	1.2
13	0.8	0.8	1.1	1.2	1.6	1.0	1.0	0.5	0.6
14	0.2	0.6	1.3	0.9	0.8	0.4	0.4	1.2	1.0
15	0.1	0.8	1.0	0.6	0.3	0.7	0.0	1.2	0.5
16	0.4	0.5	1.5	0.8	0.9	0.4	1.1	0.5	0.5
17	0.6	1.4	1.4	0.7	0.5	0.6	0.8	0.7	0.3
18	1.1	1.0	1.2	0.5	0.0	0.8	0.9	0.7	0.2
19	0.9	0.1	0.5	0.3	0.3	0.4	0.9	0.6	0.0
20	0.2	0.7	0.7	0.1	0.1	0.2	0.5	0.5	0.0
21	0.6	1.3	1.3	0.2	0.5	0.2	0.3	0.4	0.1
22	0.5	1.5	1.8	0.2	0.5	0.7	0.7	0.3	0.3
23	0.8	0.7	1.3	0.4	0.4	0.1	0.9	0.0	0.2
24	1.6	1.1	0.2	0.4	0.3	0.3	0.6	0.0	1.0
25	2.0	0.1	0.5	0.3	0.5	0.8	0.6	0.0	1.3
26	1.9	0.5	0.6	0.3	0.4	0.5	0.3	0.0	1.0
27	0.8	0.9	0.0	0.7	0.4	0.3	0.1	0.6	1.2
28	0.3	0.3	0.9	0.3	0.2	0.4	0.1	0.3	0.8
29	0.2		0.7	0.9	0.0	0.7	0.5	0.5	0.4
30	0.0		0.4	0.1	1.4	0.4	0.2	0.6	1.0
31	0.3		0.0		1.3		0.3	0.4	
Mean	0.70	0.71	0.75	0.60	0.67	0.61	0.47	0.62	0.63

Table 60

Selected Days, 1949

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Five Quiet								
3	1	6	5	1	8	2	11	10
4	2	10	6	18	10	4	23	19
5	8	11	20	20	11	15	24	20
15	9	27	21	28	21	27	25	21
30	25	31	30	29	23	28	26	23
Five Disturbed								
2	4	14	7	4	4	13	3	2
18	6	16	8	12	5	16	4	3
24	17	17	10	13	6	17	8	12
25	21	22	11	30	12	19	14	25
26	22	23	12	31	13	23	15	27
Ten Quiet								
3	1	4	1	1	8	2	1	7
4	2	6	2	15	10	3	11	10
5	5	7	4	18	11	4	12	17
14	8	8	5	19	14	5	21	18
15	9	10	6	20	20	6	22	19
20	10	11	20	24	21	10	23	20
28	19	24	21	26	23	11	24	21
29	25	27	22	27	24	15	25	22
30	26	30	25	28	27	27	26	23
31	28	31	30	29	30	28	28	29

GRAPHS OF IONOSPHERIC DATA

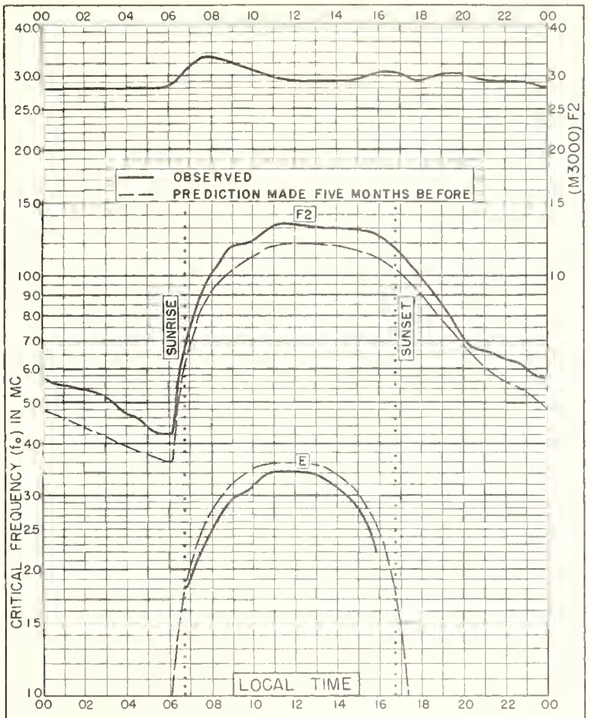

Fig. 1. WASHINGTON, D. C.
38. 7°N, 77. 1°W NOVEMBER 1949

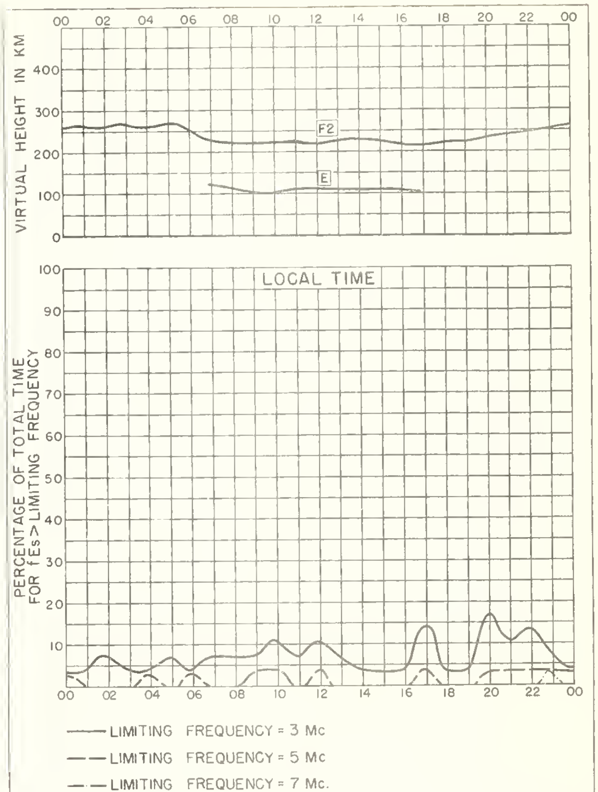

Fig. 2. WASHINGTON, D. C. NOVEMBER 1949

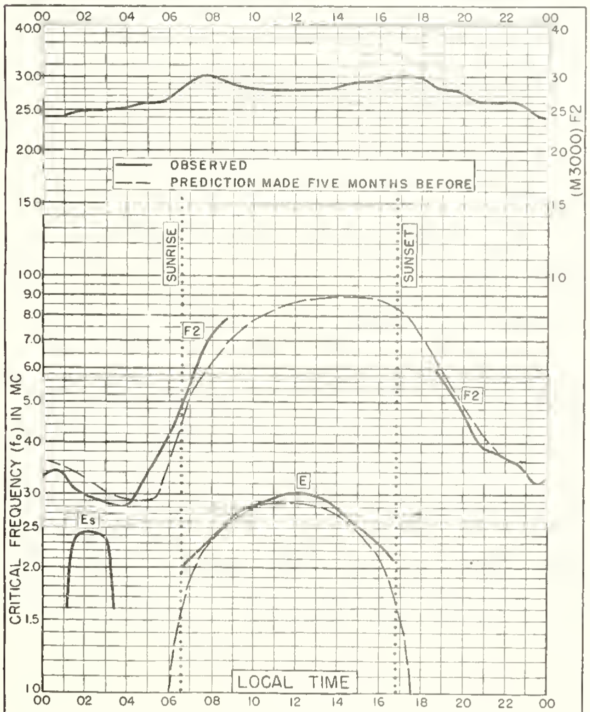

Fig. 3. OSLO, NORWAY
60. 0°N, 11. 0°E OCTOBER 1949

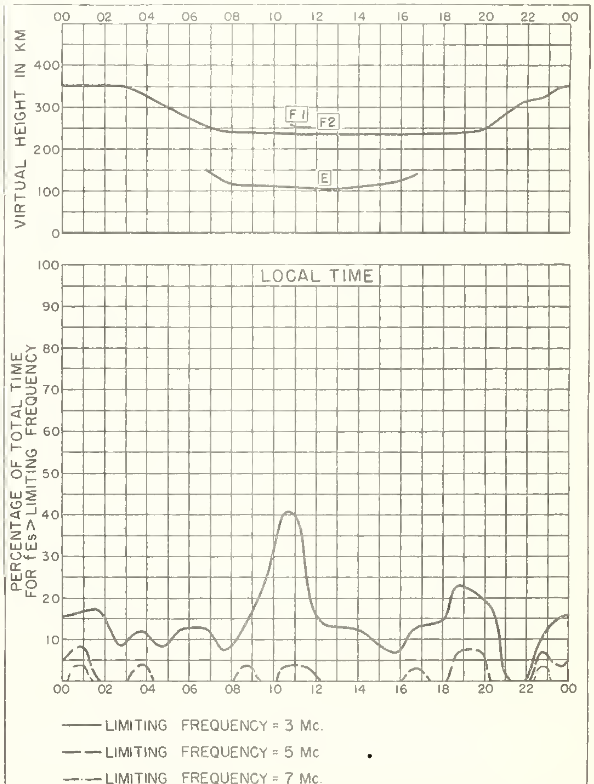

Fig. 4. OSLO, NORWAY OCTOBER 1949

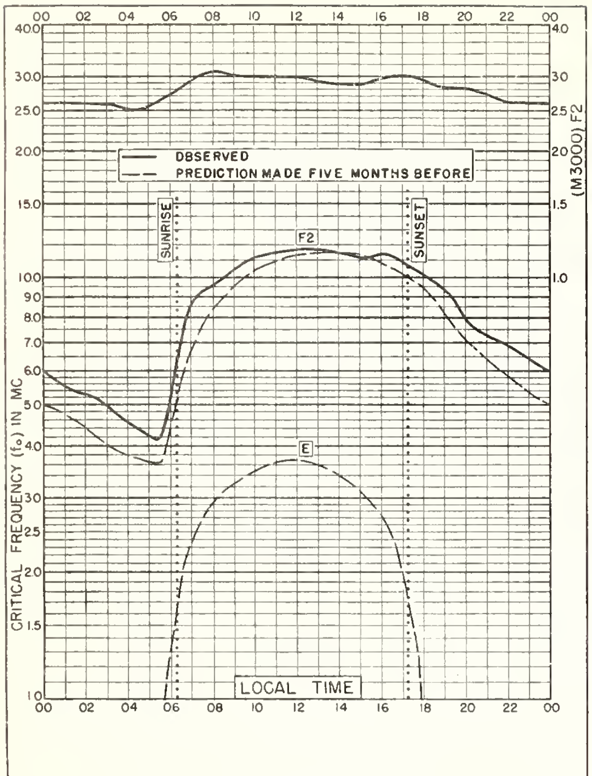

Fig. 5. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W OCTOBER 1949

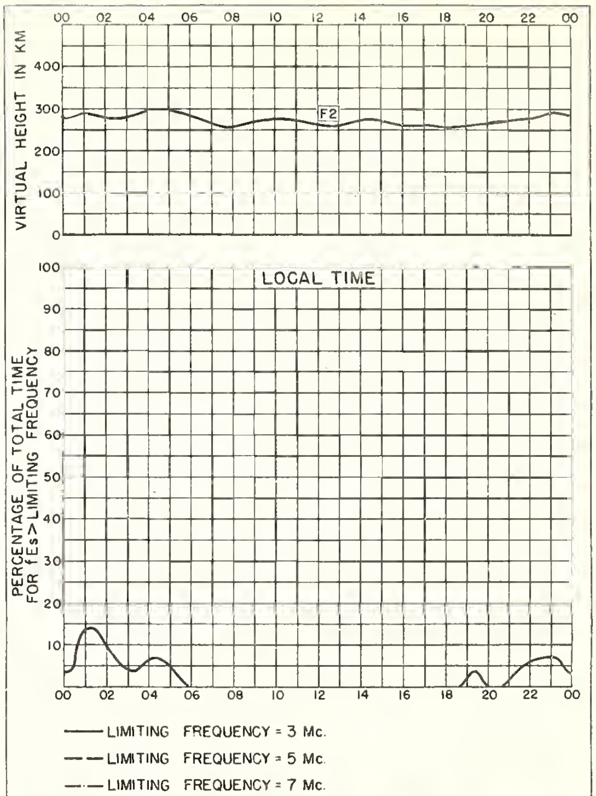

Fig. 6. BOSTON, MASSACHUSETTS OCTOBER 1949

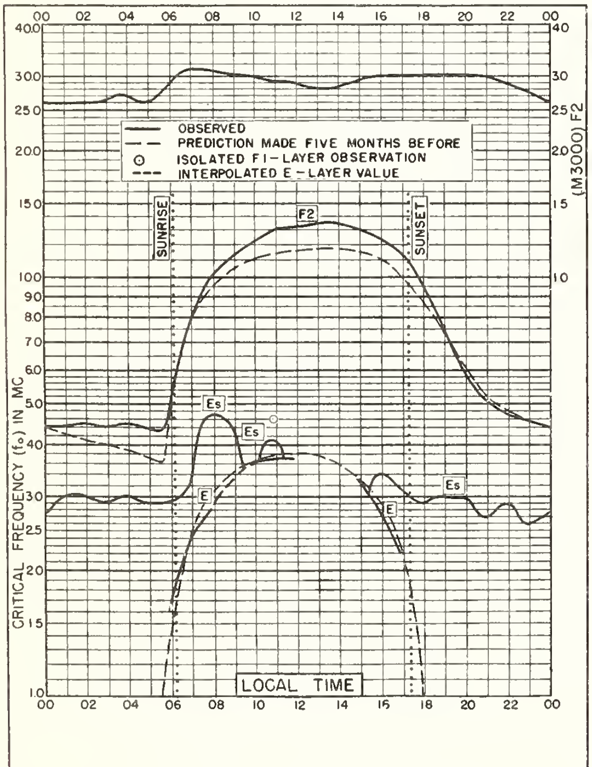

Fig. 7. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W OCTOBER 1949

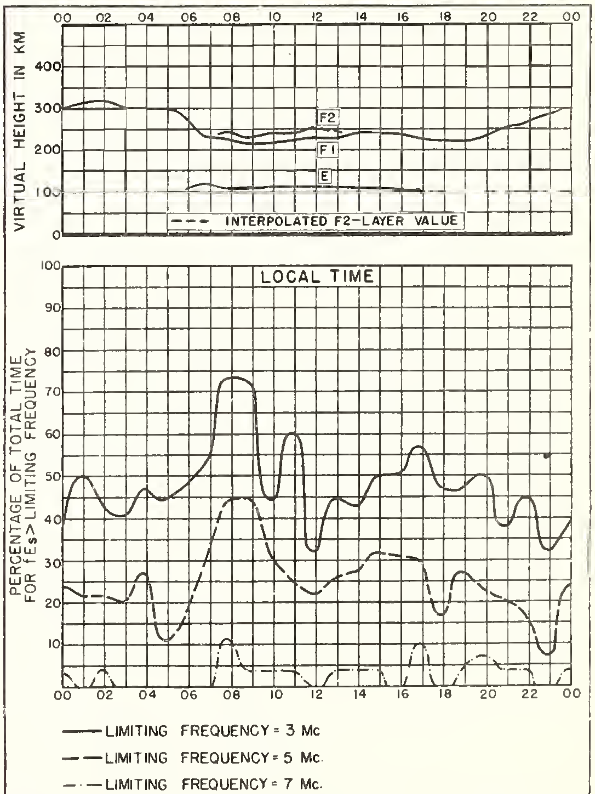

Fig. 8. SAN FRANCISCO, CALIFORNIA OCTOBER 1949

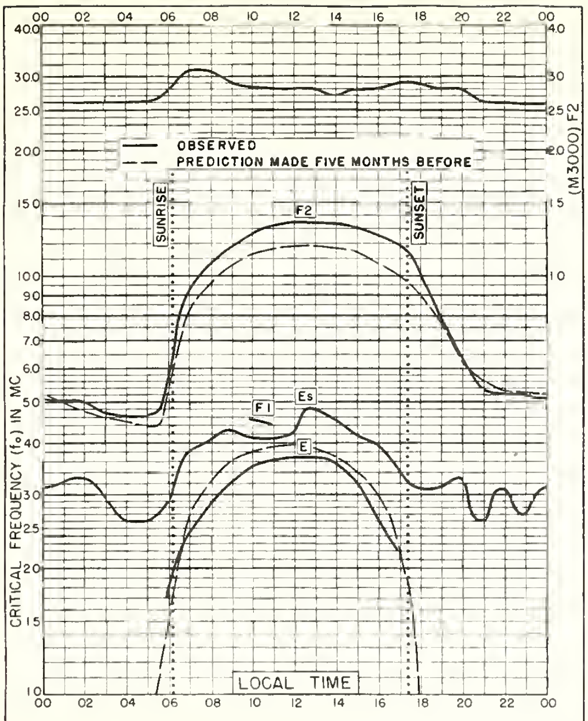

Fig. 9. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W OCTOBER 1949

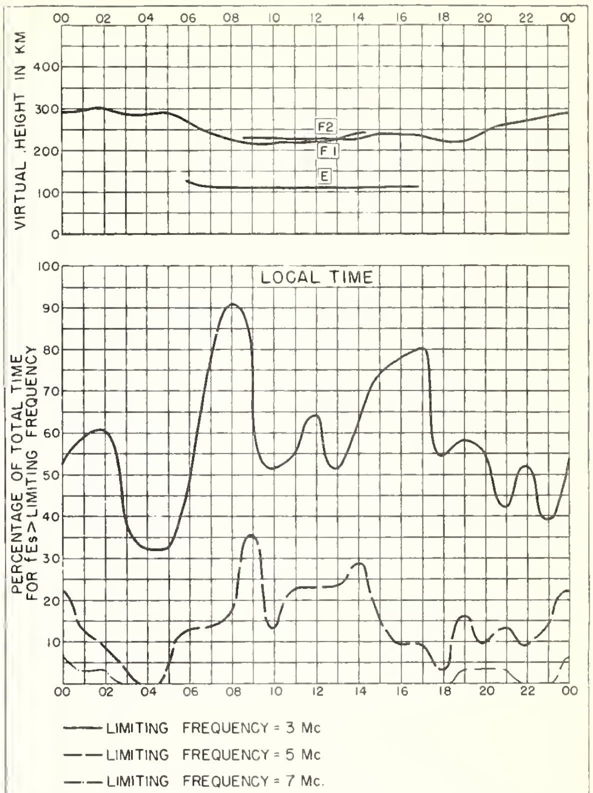

Fig 10. WHITE SANDS, NEW MEXICO OCTOBER 1949

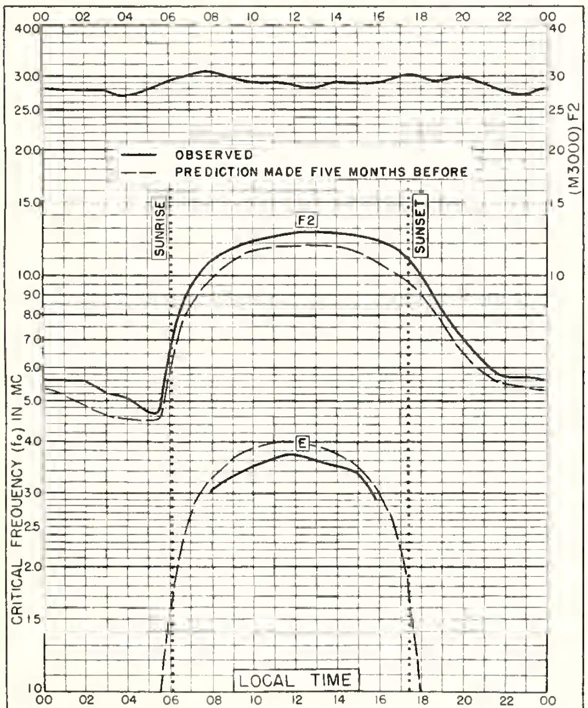

Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W OCTOBER 1949

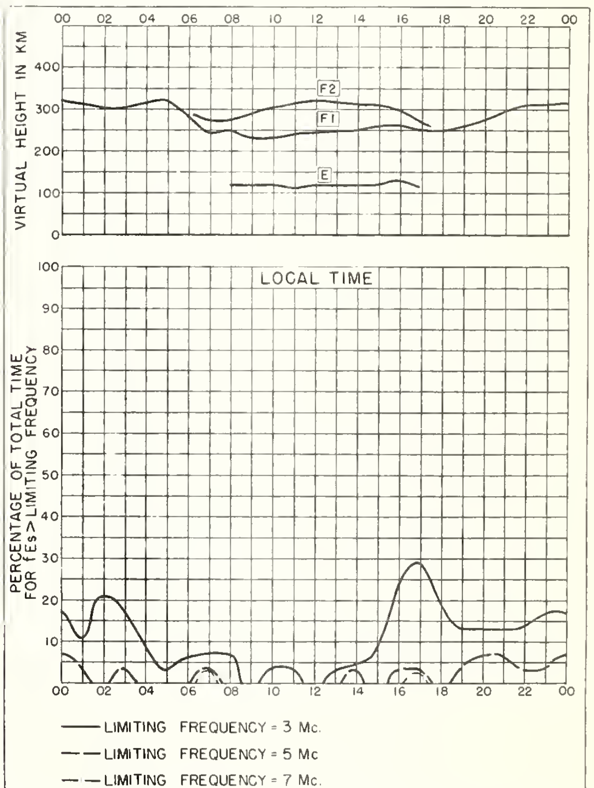

Fig. 12. BATON ROUGE, LOUISIANA OCTOBER 1949

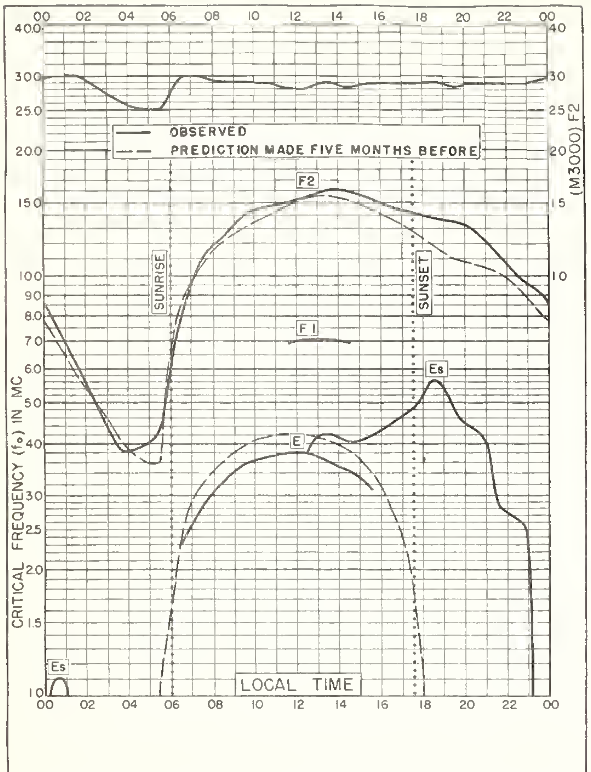

Fig. 13. MAUI, HAWAII
20.8°N, 156.5°W OCTOBER 1949

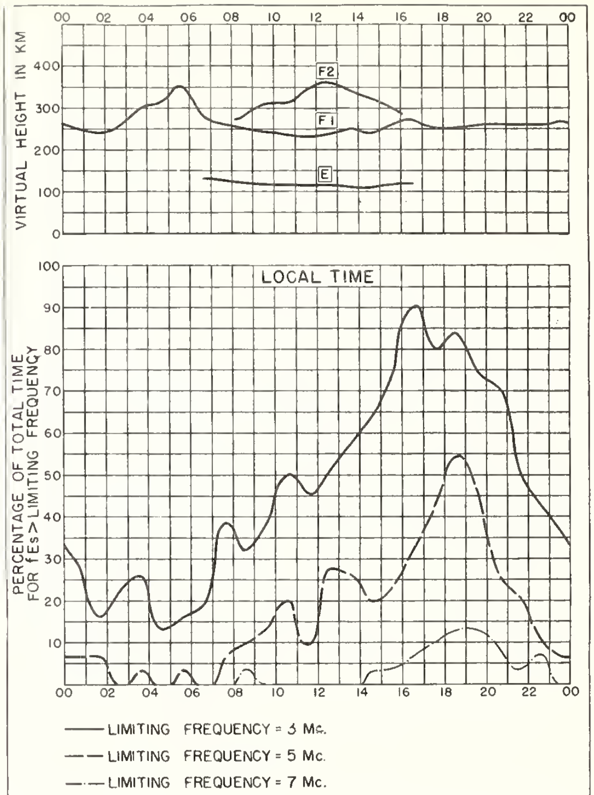

Fig. 14. MAUI, HAWAII OCTOBER 1949

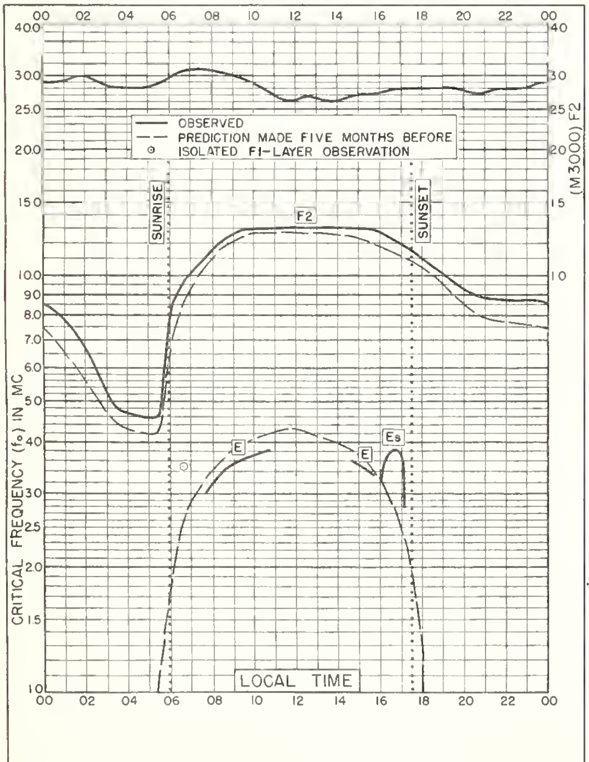

Fig. 15. SAN JUAN, PUERTO RICO
18.4°N, 66.1°W OCTOBER 1949

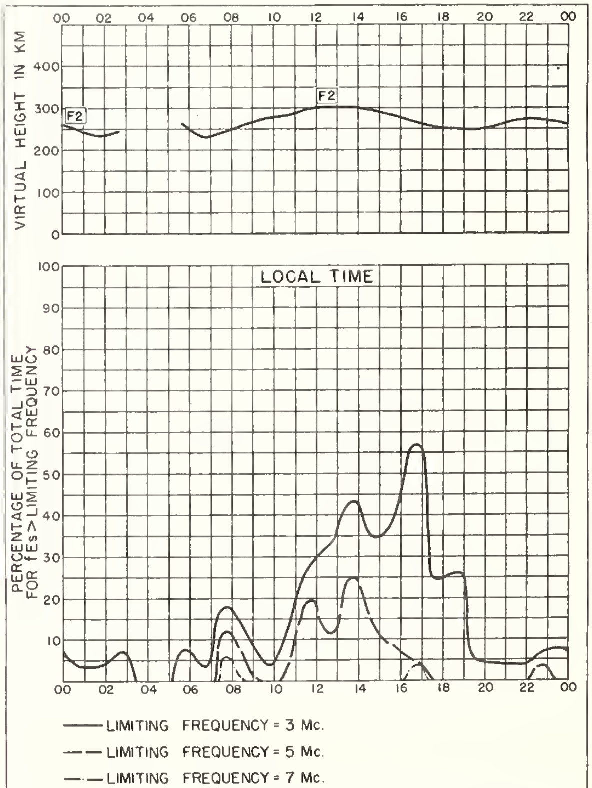

Fig. 16. SAN JUAN, PUERTO RICO OCTOBER 1949

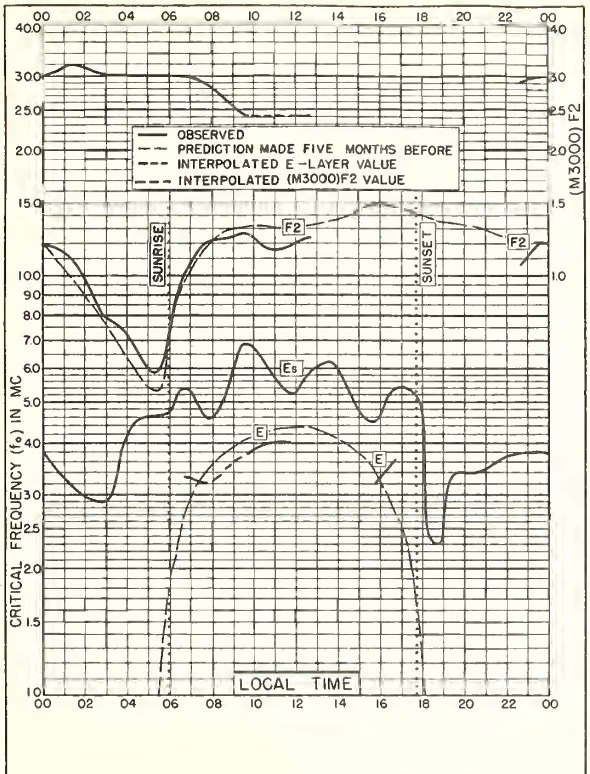

Fig. 17. GUAM I.
13.6°N, 144.9°E OCTOBER 1949

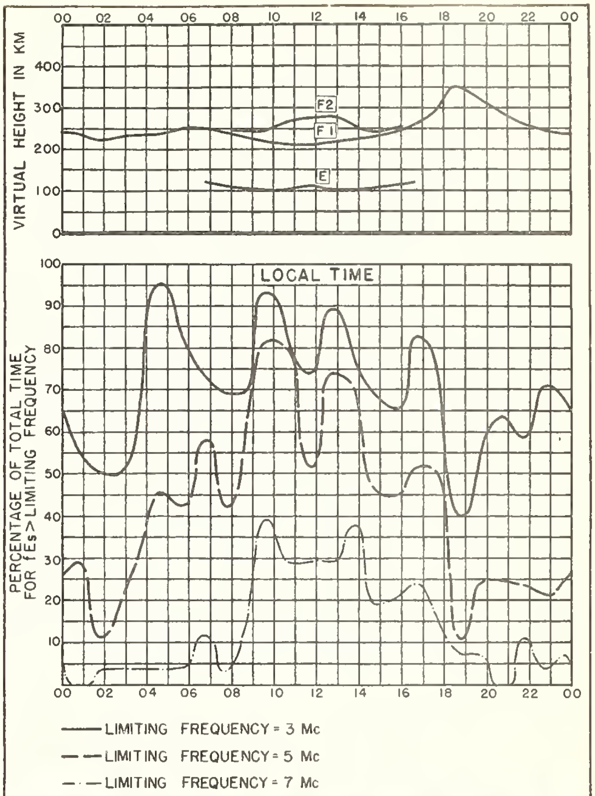

Fig. 18. GUAM I. OCTOBER 1949

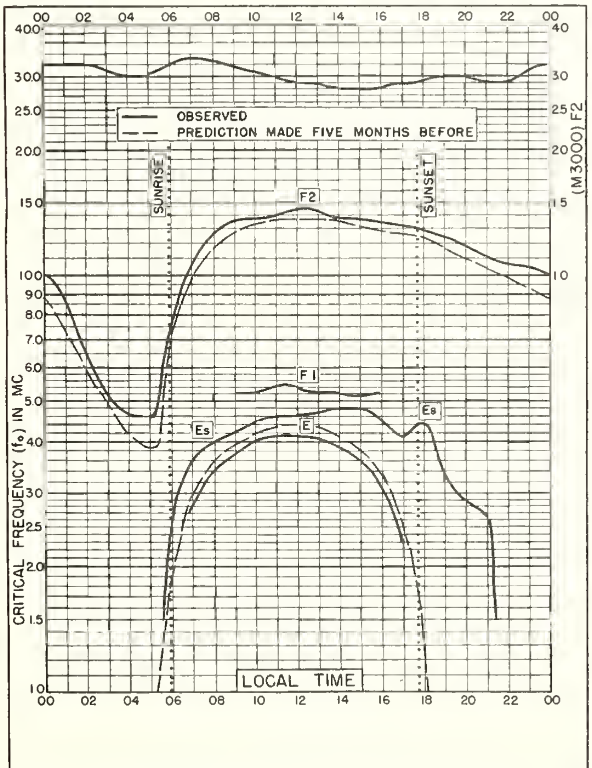

Fig. 19. TRINIDAD, BRIT. WEST INDIES
10.6°N, 61.2°W OCTOBER 1949

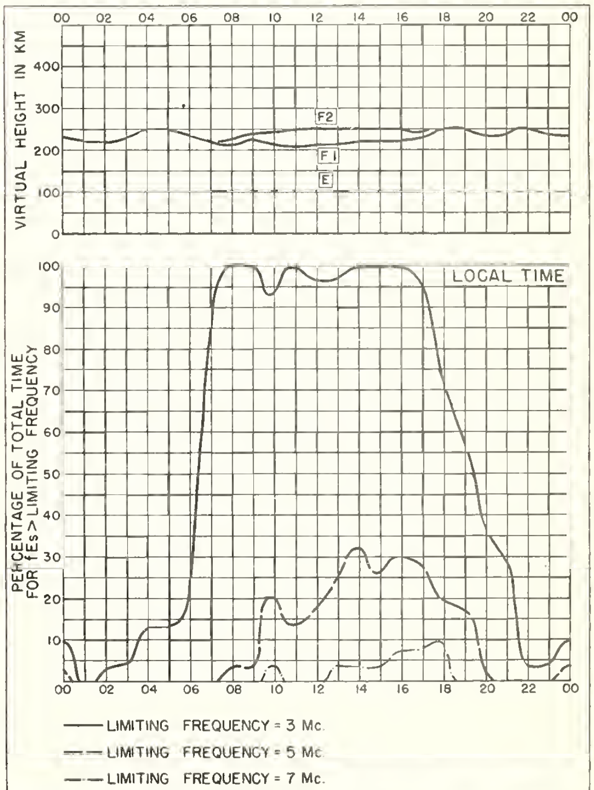

Fig. 20. TRINIDAD, BRIT. WEST INDIES OCTOBER 1949

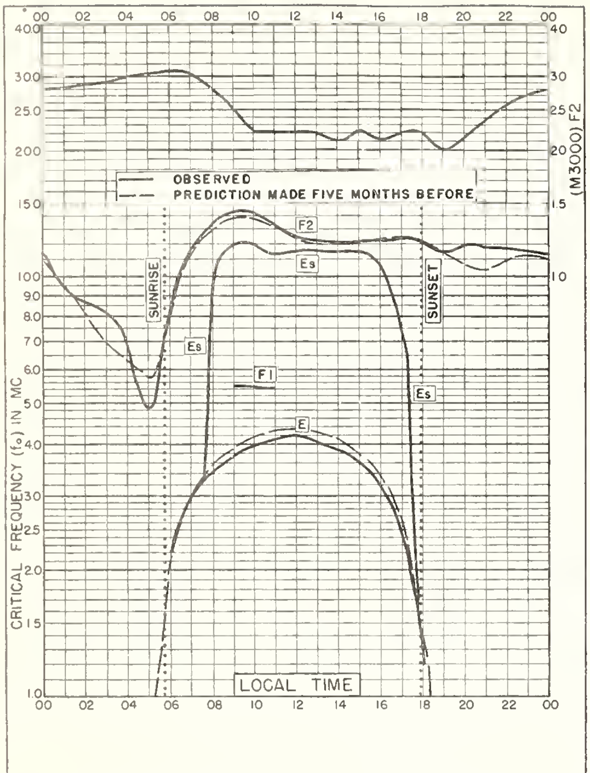

Fig. 21. HUANCAYO, PERU
12.0°S, 75.3°W OCTOBER 1949

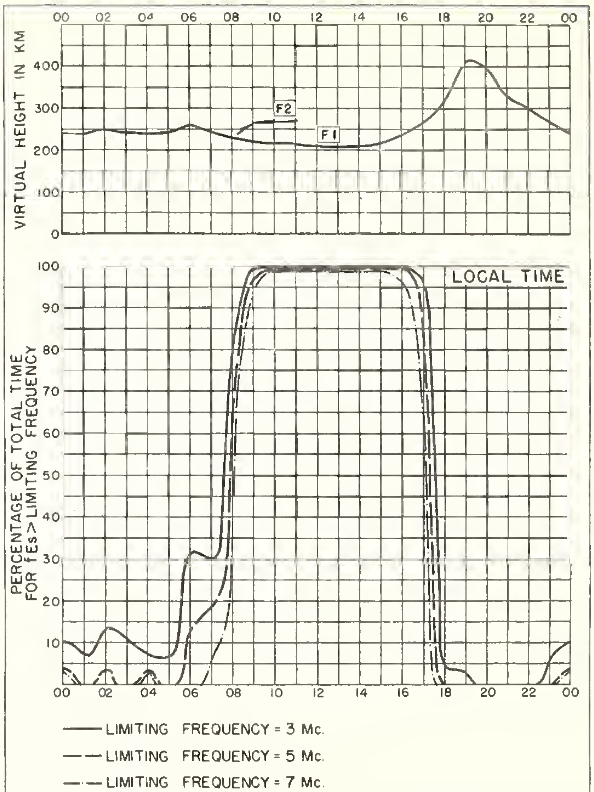

Fig. 22. HUANCAYO, PERU OCTOBER 1949

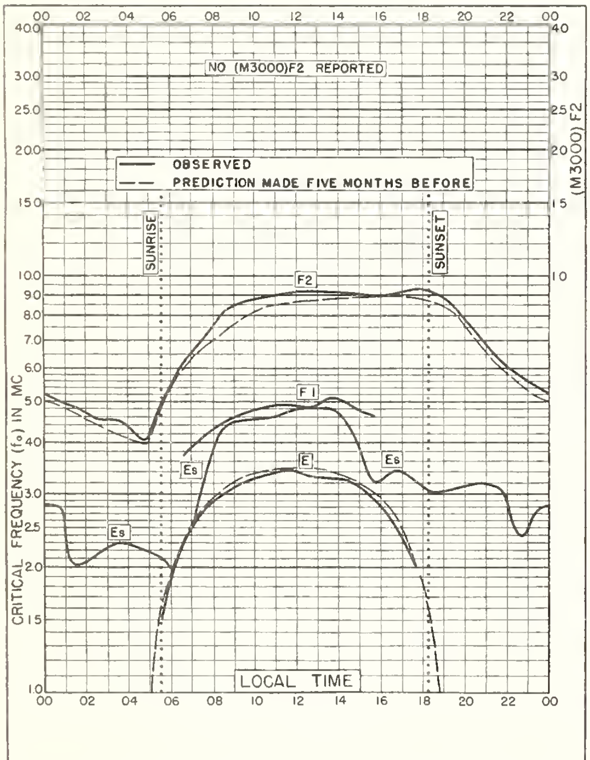

Fig. 23. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E SEPTEMBER 1949

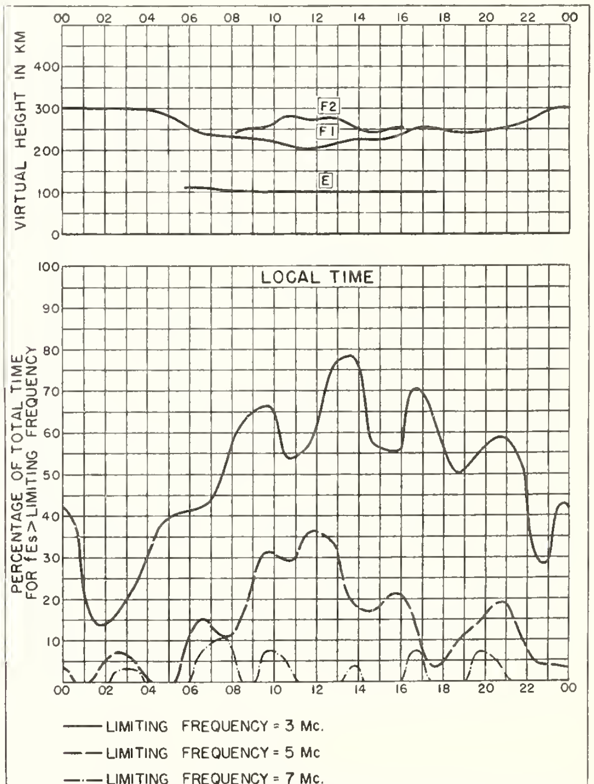

Fig. 24. LINDAU/HARZ, GERMANY SEPTEMBER 1949

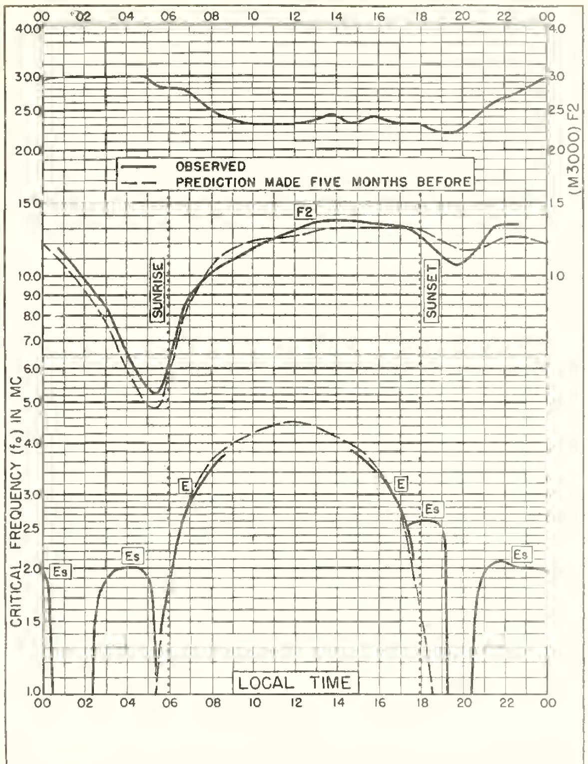

Fig. 25. PALMYRA I.
5. 9°N, 162.1°W SEPTEMBER 1949

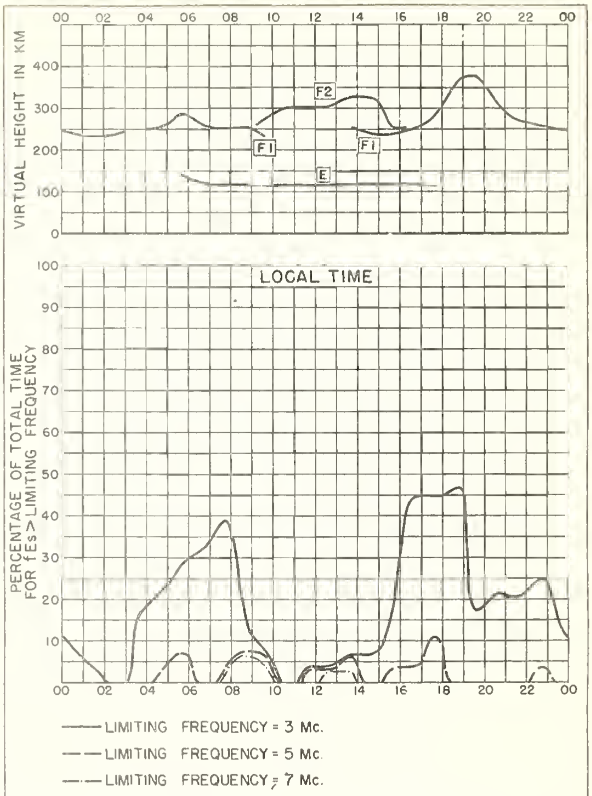

Fig. 26. PALMYRA I. SEPTEMBER 1949

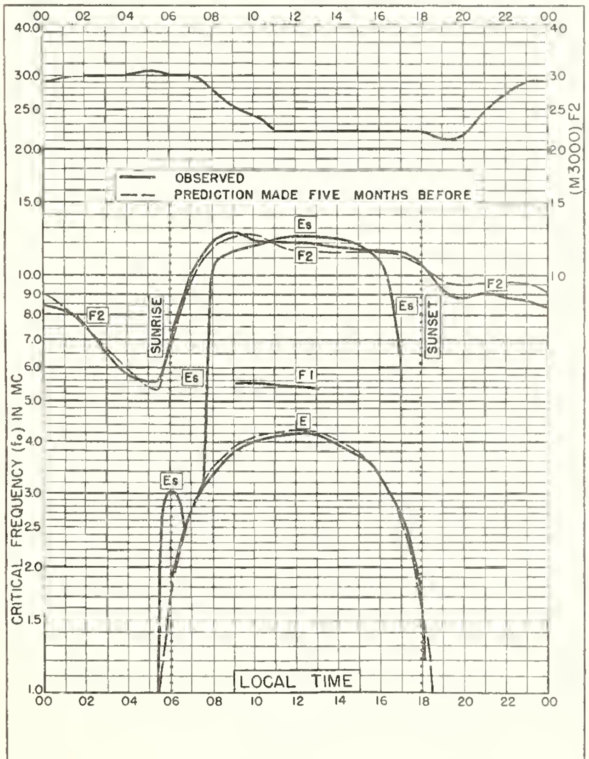

Fig. 27. HUANCAYO, PERU
12.0°S, 75.3°W SEPTEMBER 1949

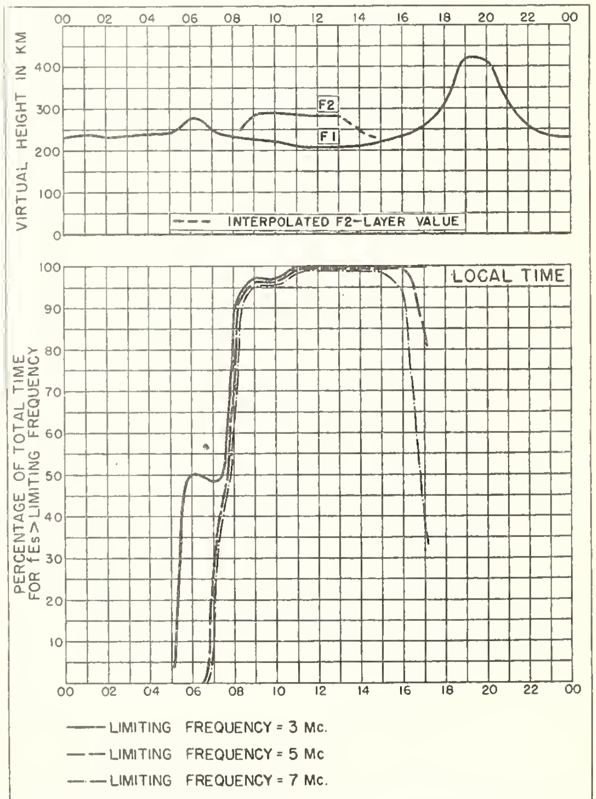

Fig. 28. HUANCAYO, PERU SEPTEMBER 1949

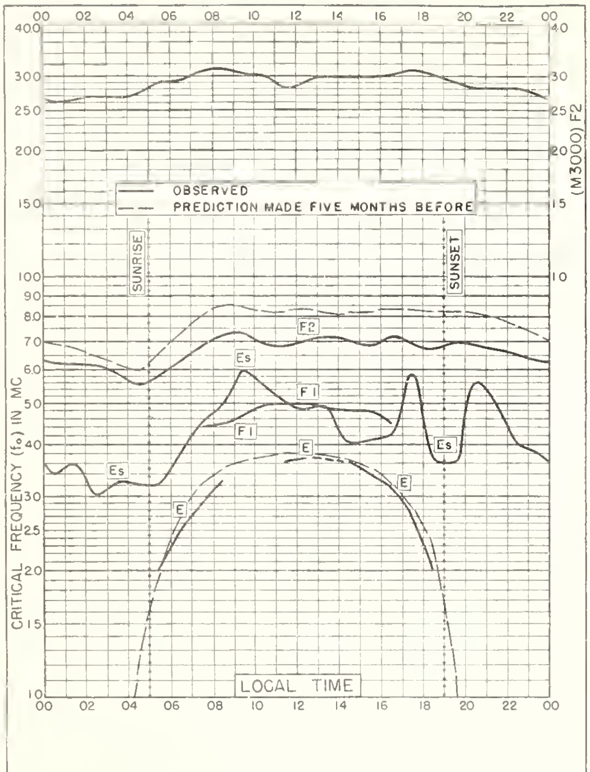

Fig. 29. WAKKANAI, JAPAN
45.4°N, 141. 7°E AUGUST 1949

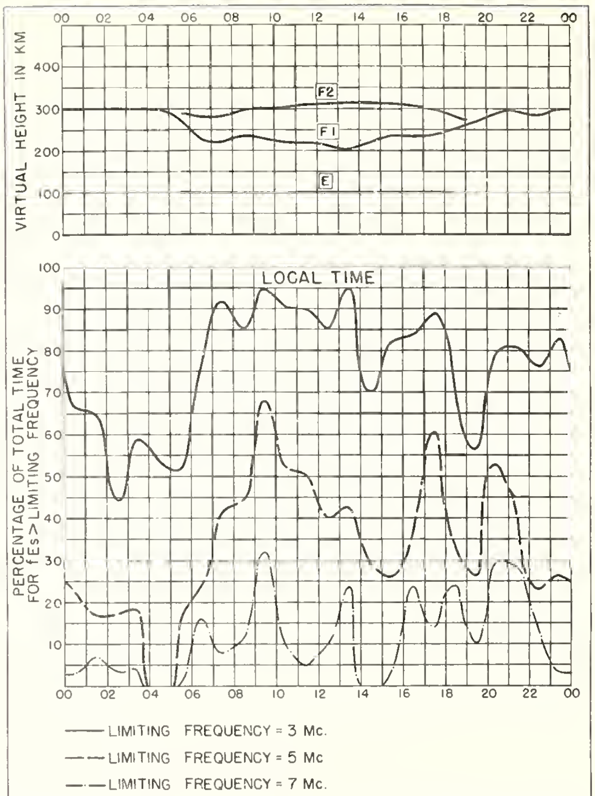

Fig. 30. WAKKANAI, JAPAN AUGUST 1949

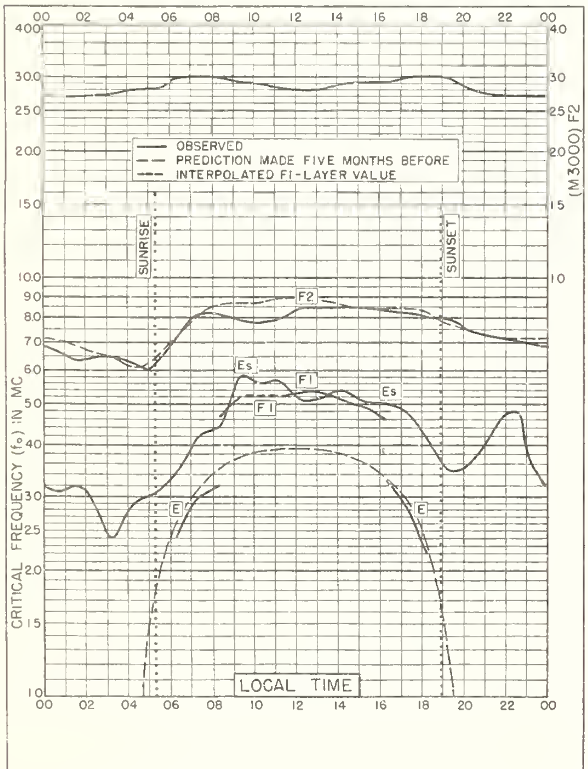

Fig. 31. FUKAURA, JAPAN
40. 6°N, 139. 9°E AUGUST 1949

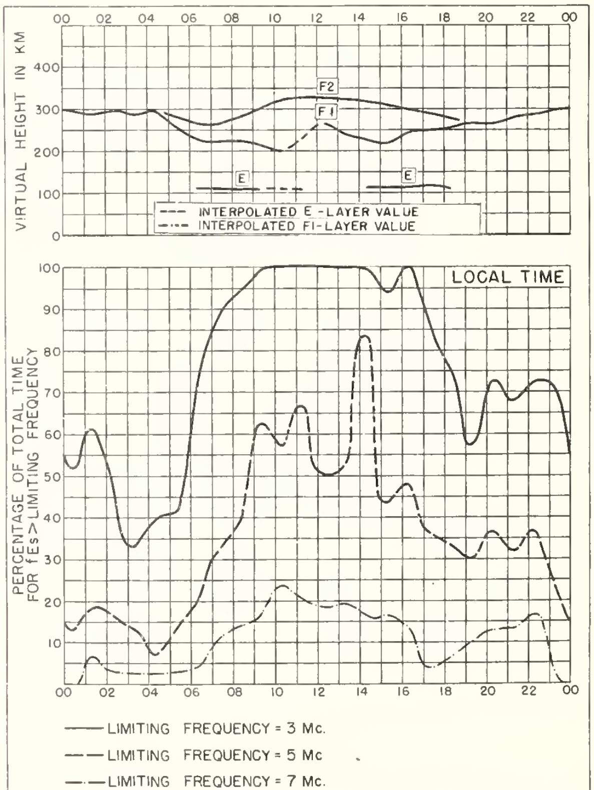

Fig. 32. FUKAURA, JAPAN AUGUST 1949

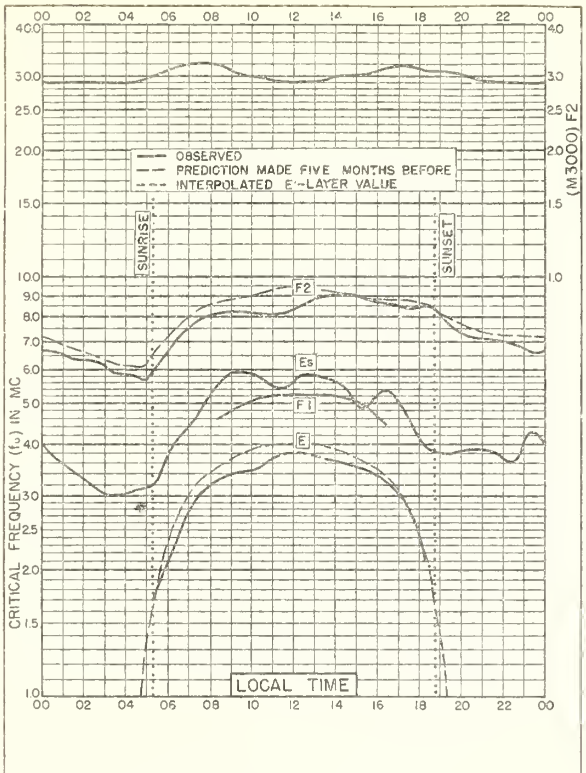

Fig. 33. SHIBATA, JAPAN
37.9°N, 139.3°E AUGUST 1949

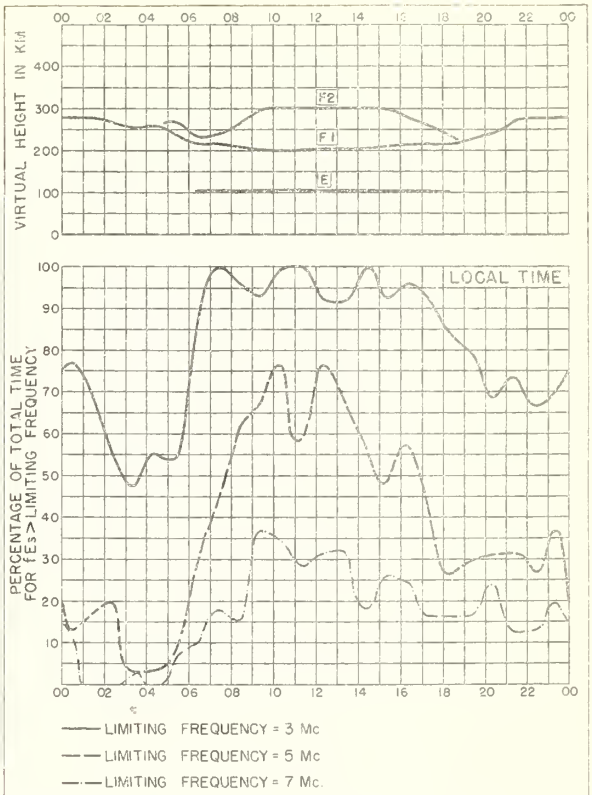

Fig. 34. SHIBATA, JAPAN AUGUST 1949

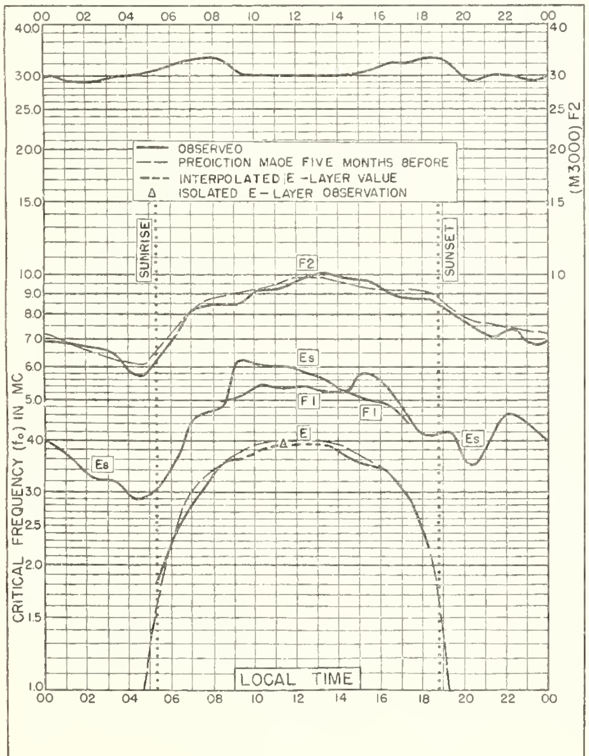

Fig. 35. TOKYO, JAPAN
35.7°N, 139.5°E AUGUST 1949

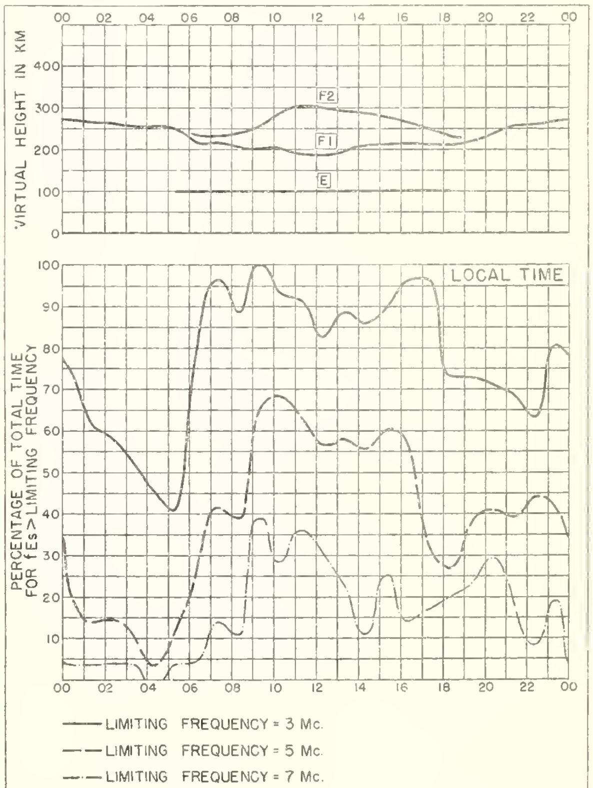

Fig. 36. TOKYO, JAPAN AUGUST 1949

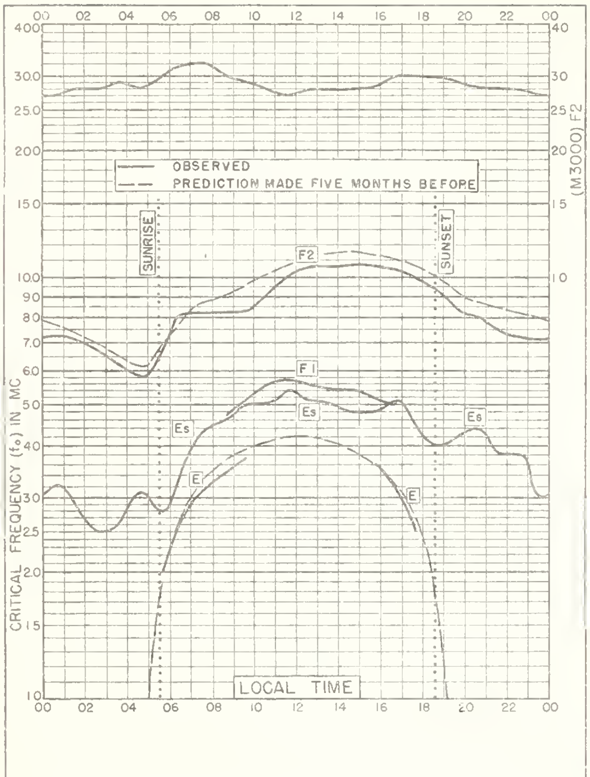

Fig. 37. YAMAKAWA, JAPAN
31. 2°N, 130. 6°E AUGUST 1949

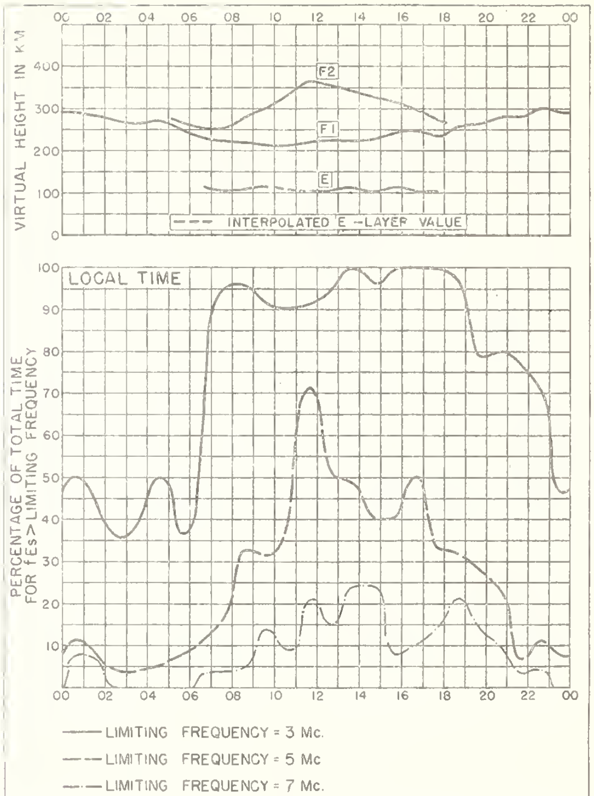

Fig. 38. YAMAKAWA, JAPAN AUGUST 1949

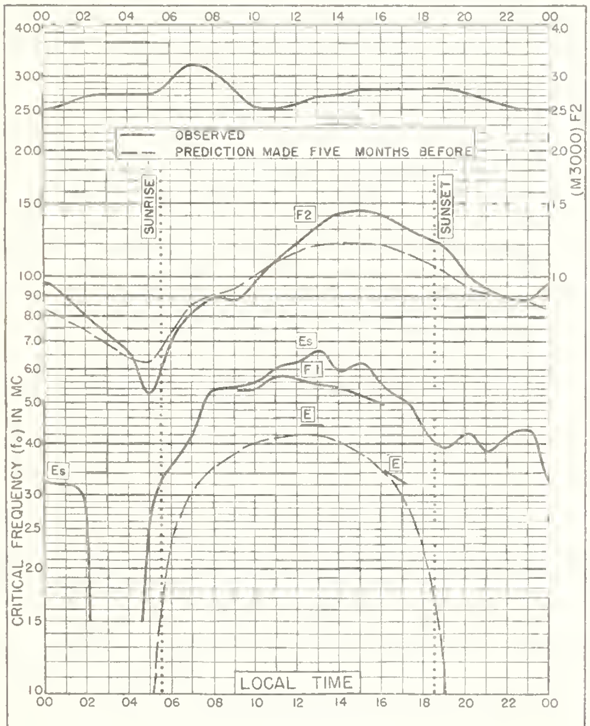

Fig. 39. CHUNGKING, CHINA
29. 4°N, 106. 8°E AUGUST 1949

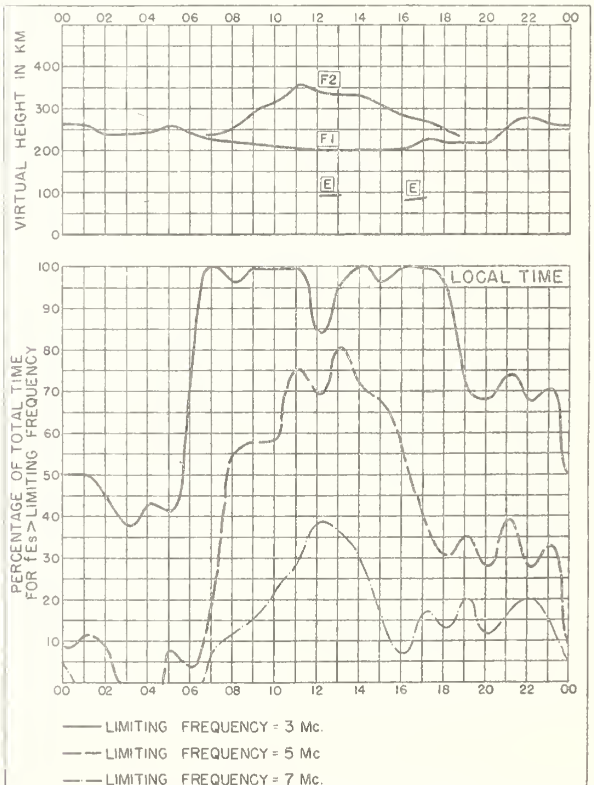

Fig. 40. CHUNGKING, CHINA AUGUST 1949

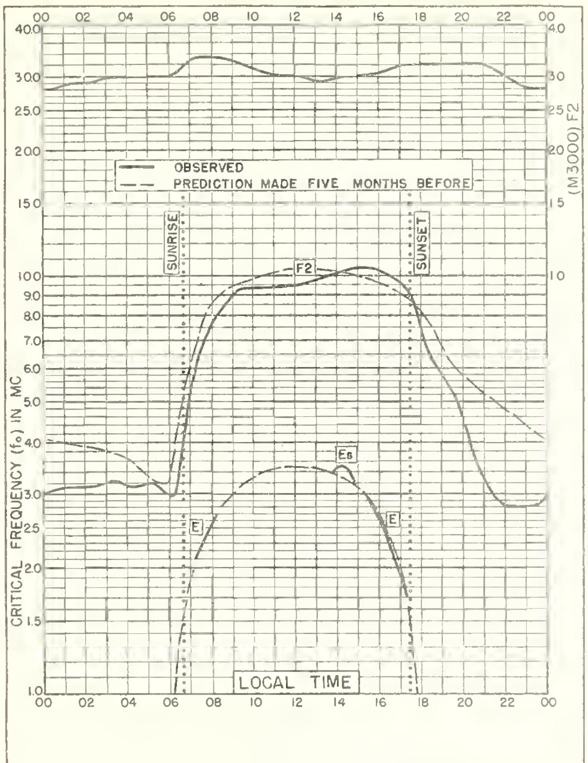

Fig. 41. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E AUGUST 1949

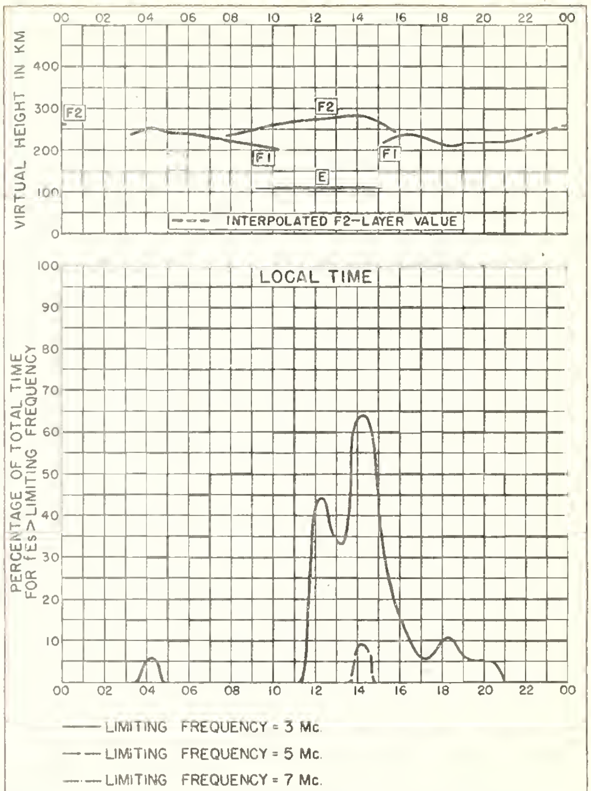

Fig. 42. CAPETOWN, U. OF S. AFRICA AUGUST 1949

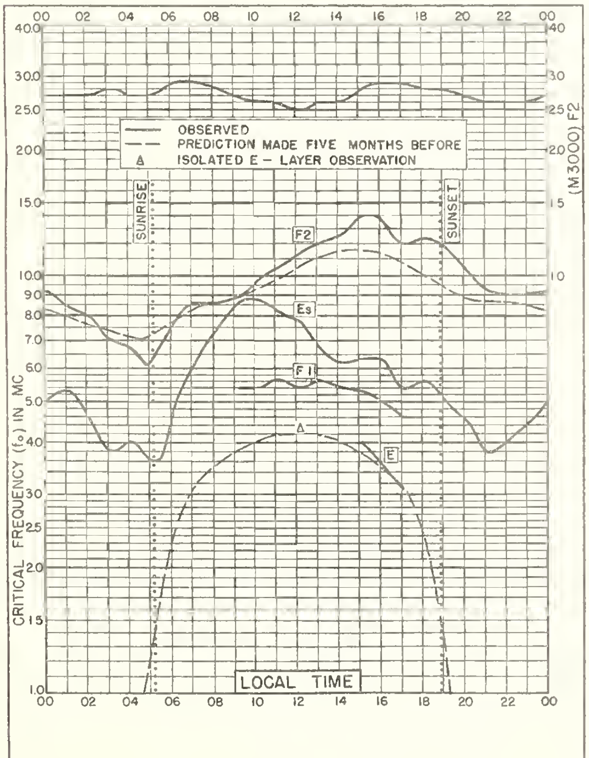

Fig. 43. CHUNGKING, CHINA
29.4°N, 106.8°E JULY 1949

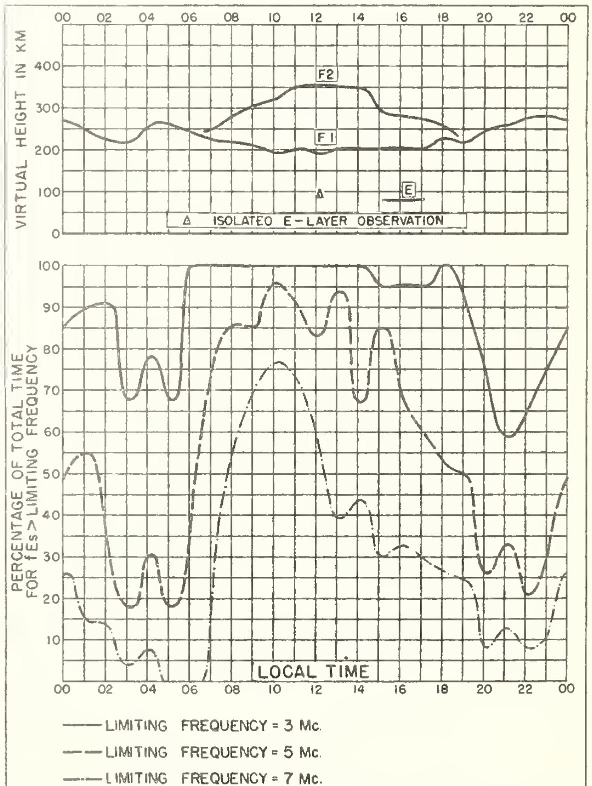

Fig. 44. CHUNGKING, CHINA JULY 1949

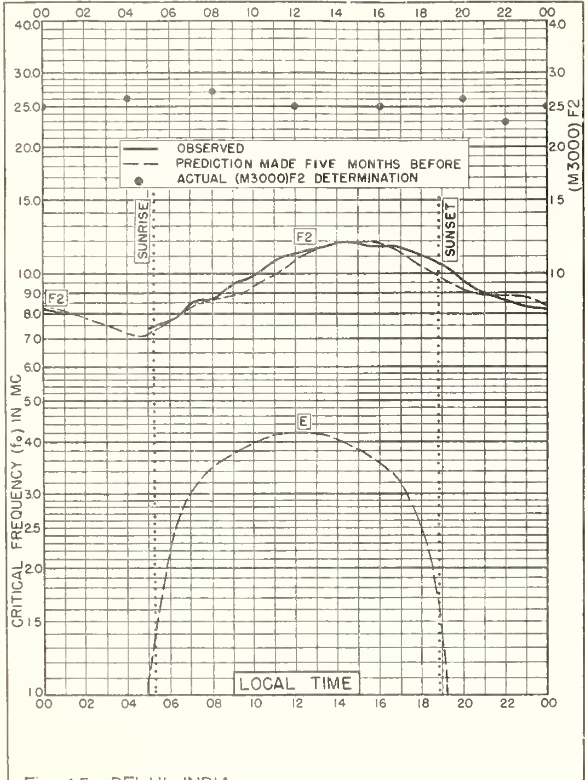

Fig. 45. DELHI, INDIA
28.6°N, 77.1°E JULY 1949

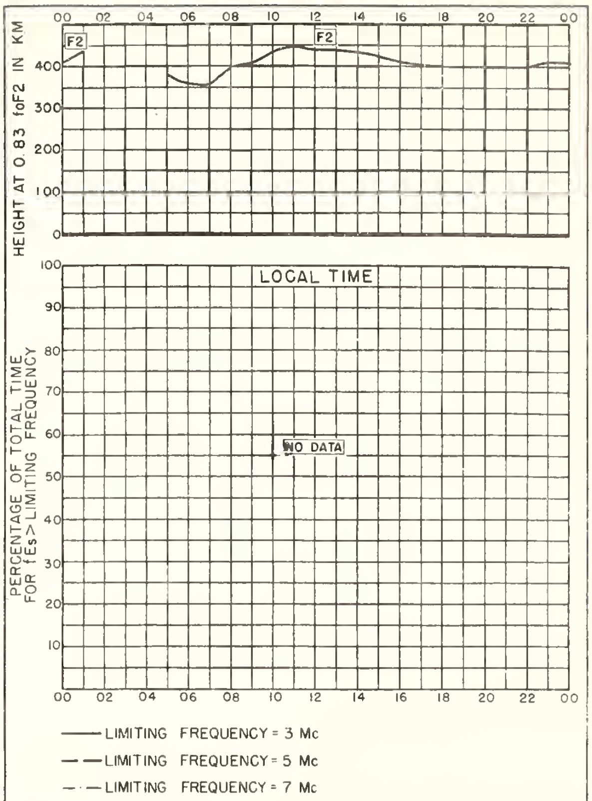

Fig. 46. DELHI, INDIA JULY 1949

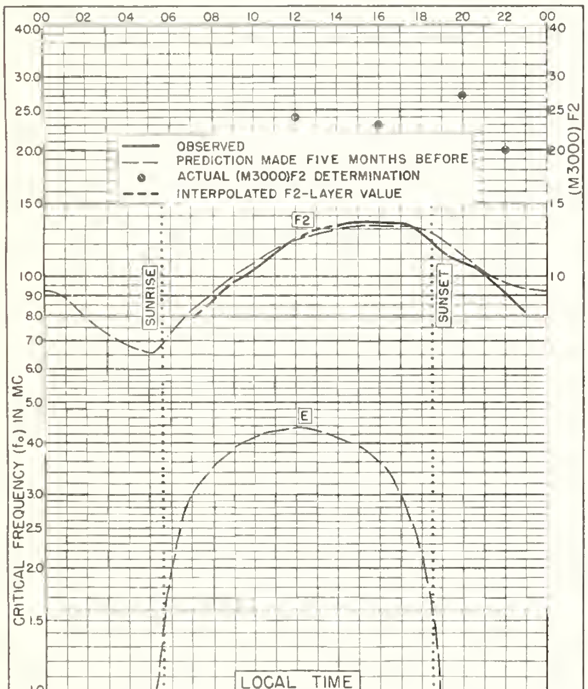

Fig. 47 BOMBAY, INDIA
19.0°N, 73.0°E JULY 1949

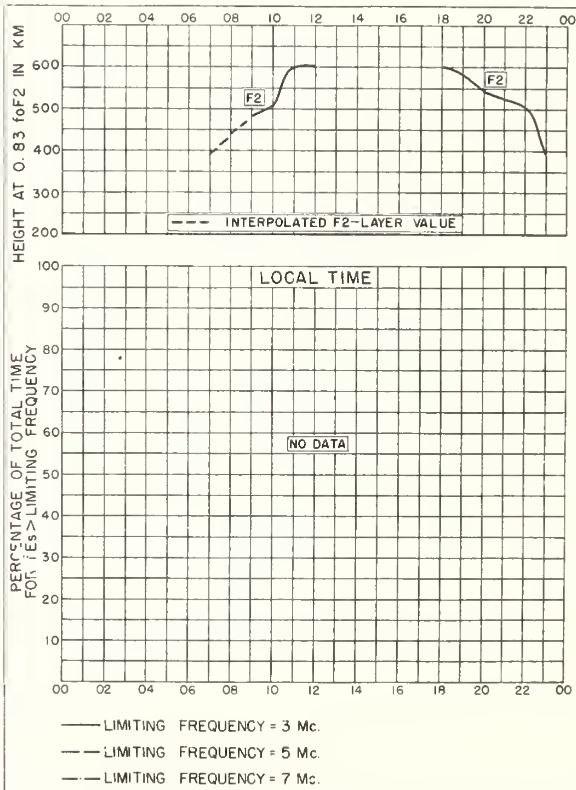

Fig. 48. BOMBAY, INDIA JULY 1949

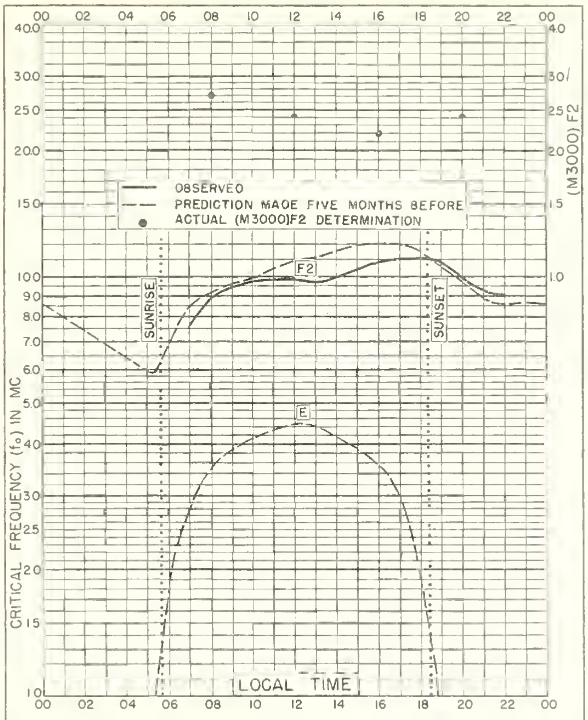

Fig. 49. MADRAS, INDIA
13.0°N, 80.2°E JULY 1949

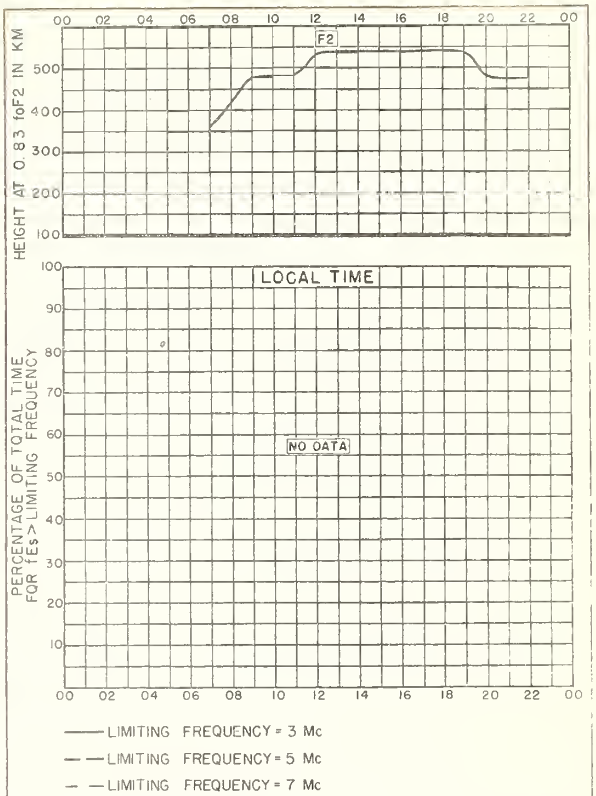

Fig. 50. MADRAS, INDIA JULY 1949

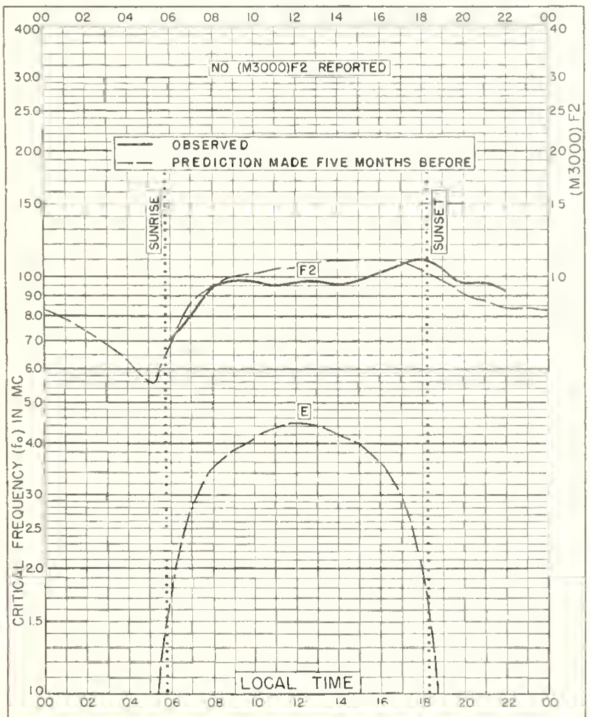

Fig. 51. TIRUCHIRAPALLI, INDIA
10.8°N, 78.8°E JULY 1949

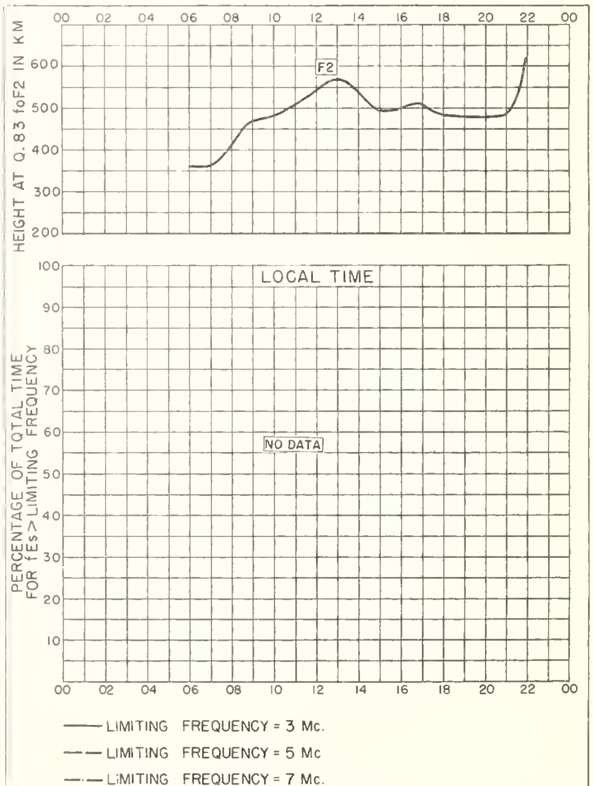

Fig. 52. TIRUCHIRAPALLI, INDIA JULY 1949

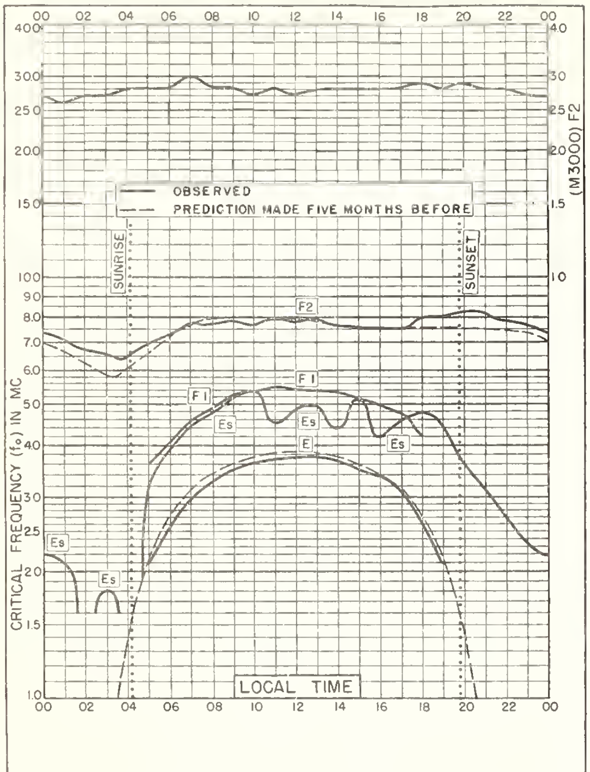

Fig. 53. FRIBOURG, GERMANY
48.1°N, 7.8°E JUNE 1949

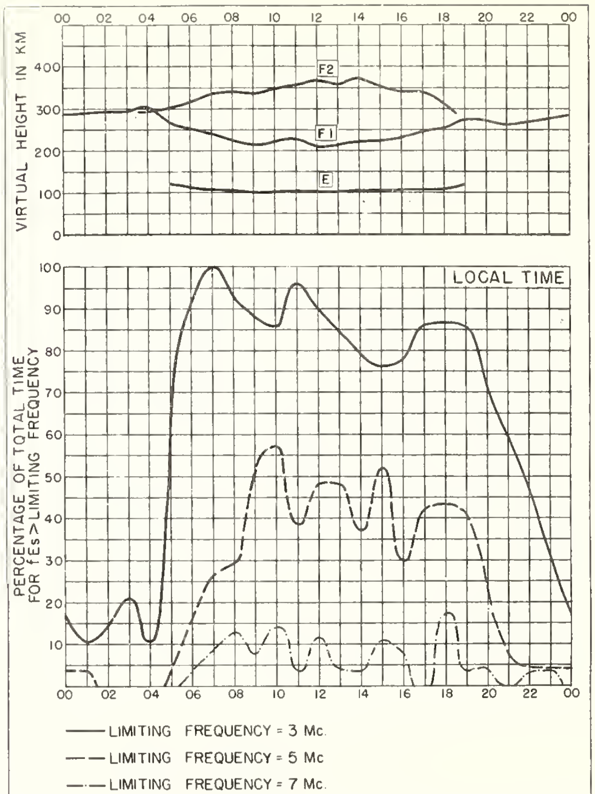

Fig. 54. FRIBOURG, GERMANY JUNE 1949

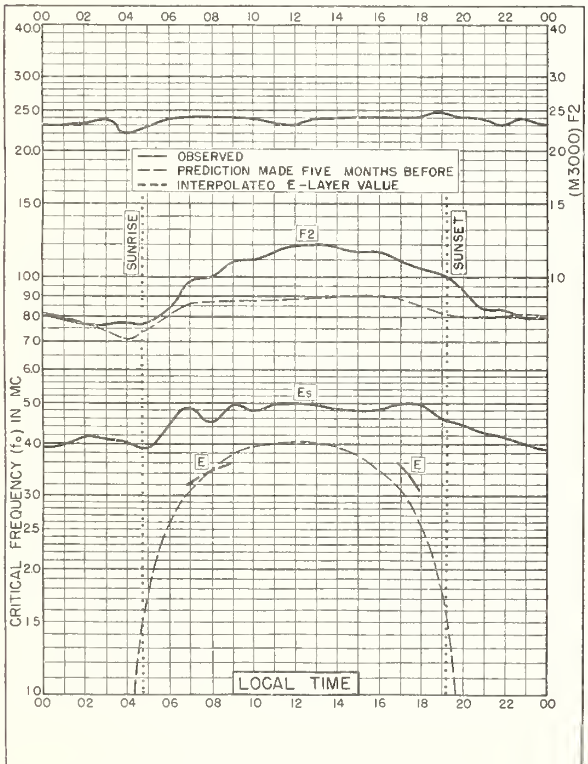

Fig. 55. LANCHOW, CHINA
36.1°N, 103.8°E JUNE 1949

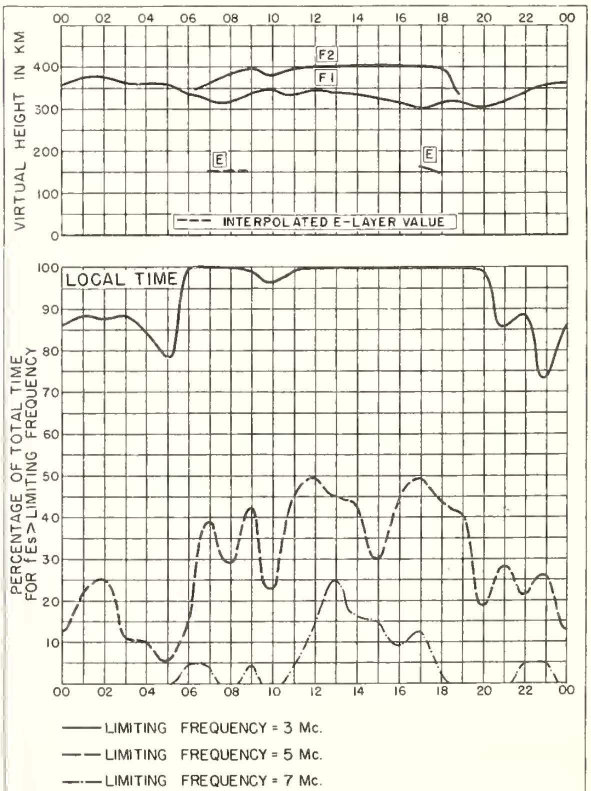

Fig. 56. LANCHOW, CHINA JUNE 1949

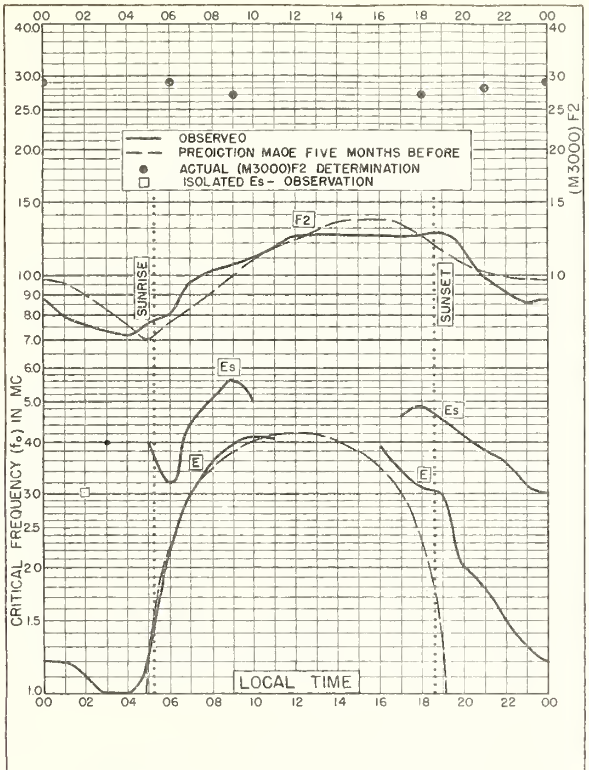

Fig. 57. CALCUTTA, INDIA
22.6°N, 88.4°E JUNE 1949

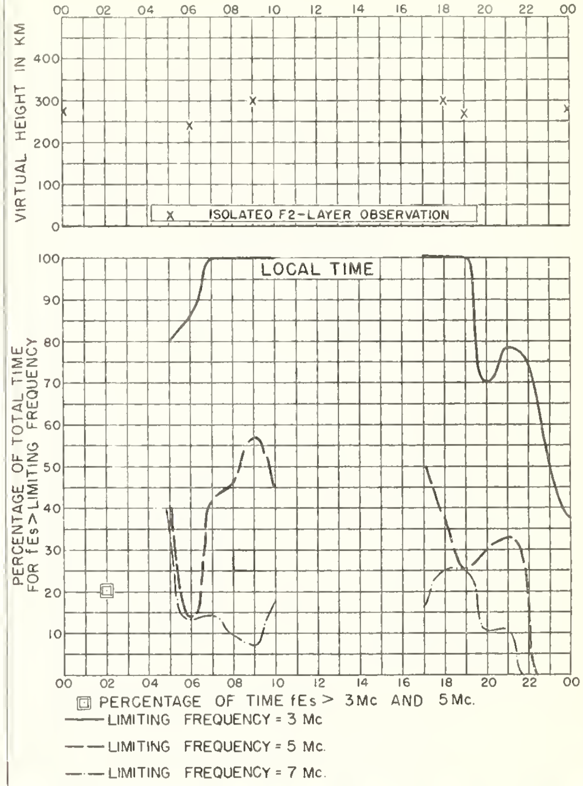

Fig. 58. CALCUTTA, INDIA JUNE 1949

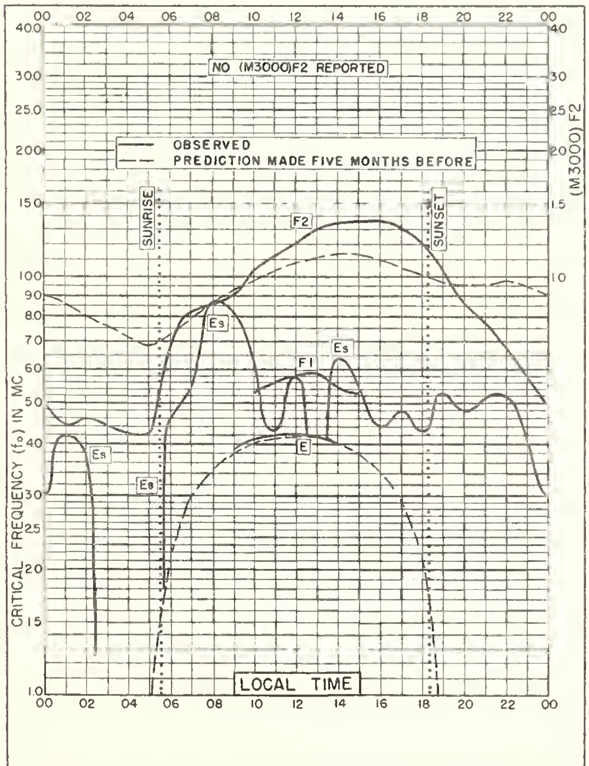

Fig. 59. DAKAR, FRENCH W. AFRICA
14.6°N, 17.4°W JUNE 1949

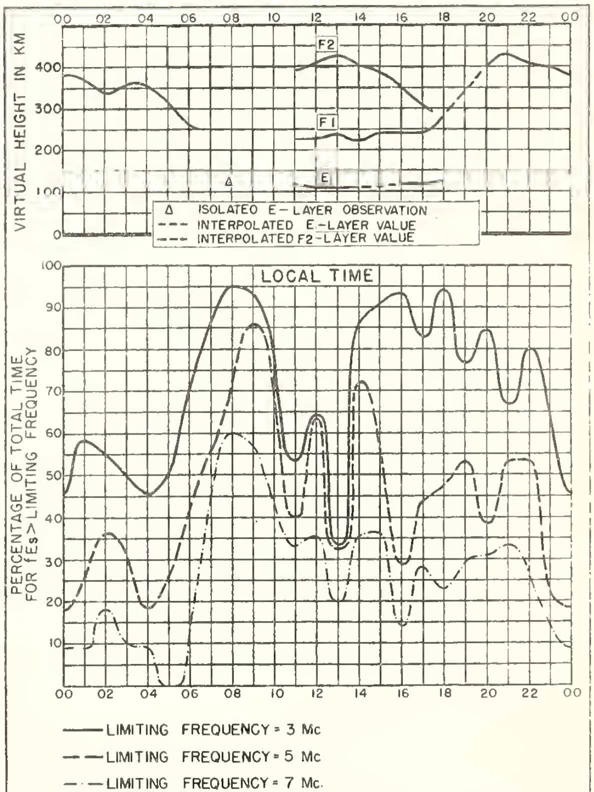

Fig. 60. DAKAR, FRENCH W. AFRICA JUNE 1949

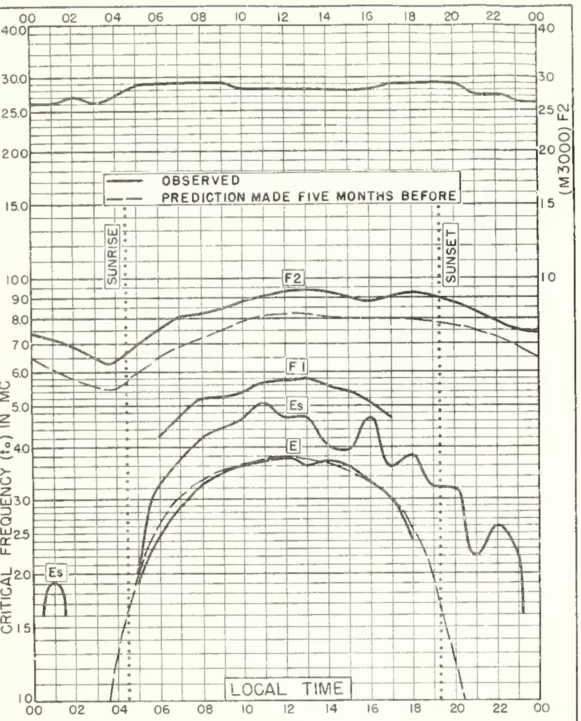

Fig. 61. FRIBOURG, GERMANY
48.1°N, 7.8°E MAY 1949

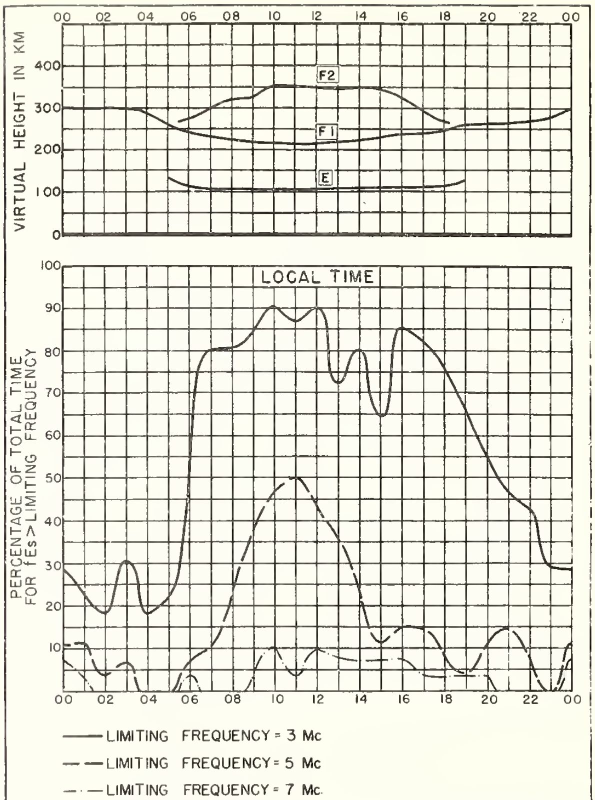

Fig. 62. FRIBOURG, GERMANY MAY 1949

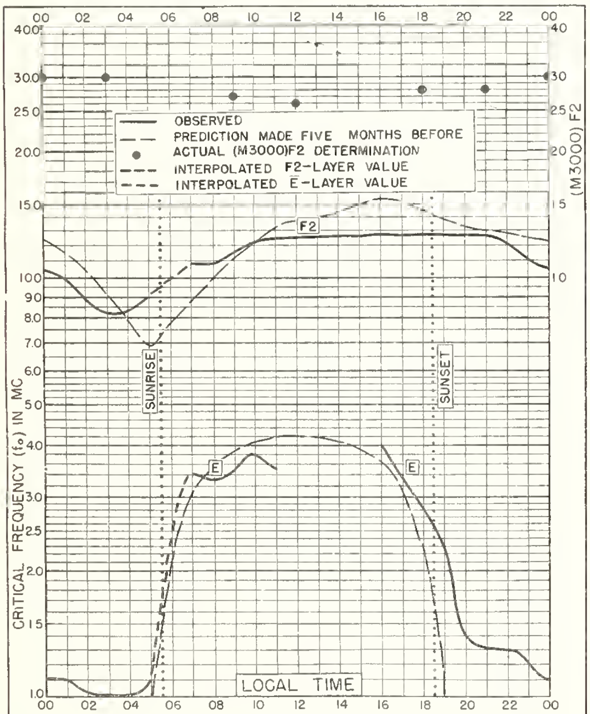

Fig. 63. CALCUTTA, INDIA
22.6°N, 88.4°E MAY 1949

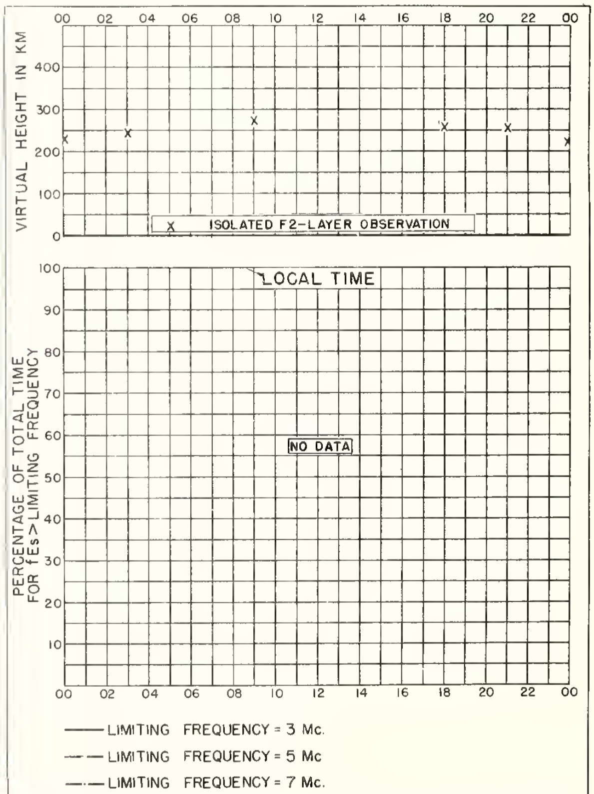

Fig. 64. CALCUTTA, INDIA MAY 1949

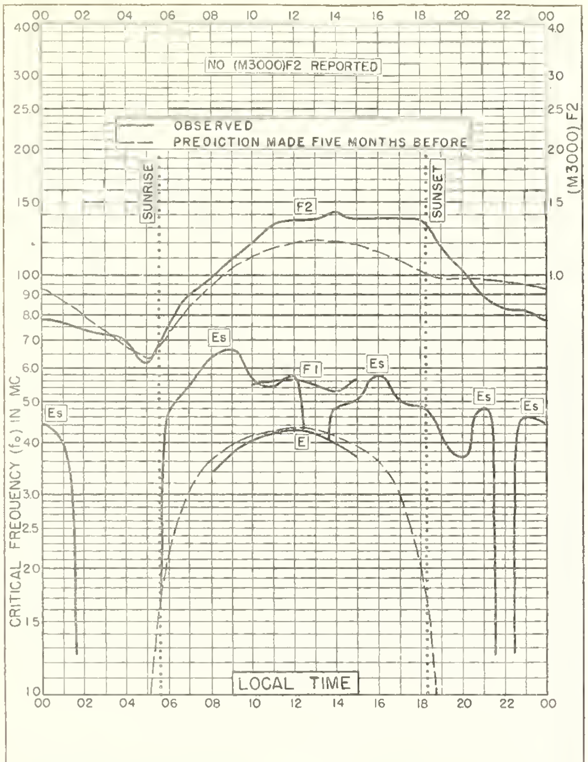

Fig. 65. DAKAR, FRENCH W. AFRICA
14.6°N, 17.4°W MAY 1949

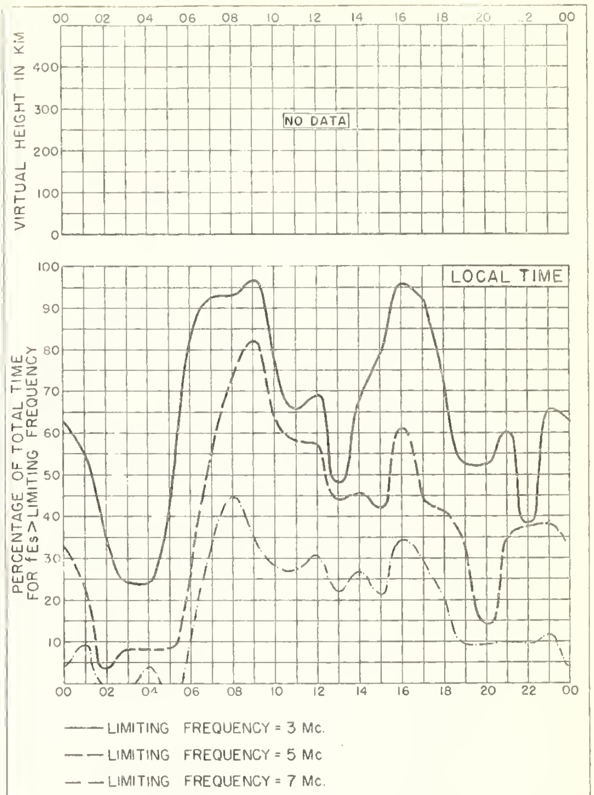

Fig. 66. DAKAR, FRENCH W. AFRICA MAY 1949

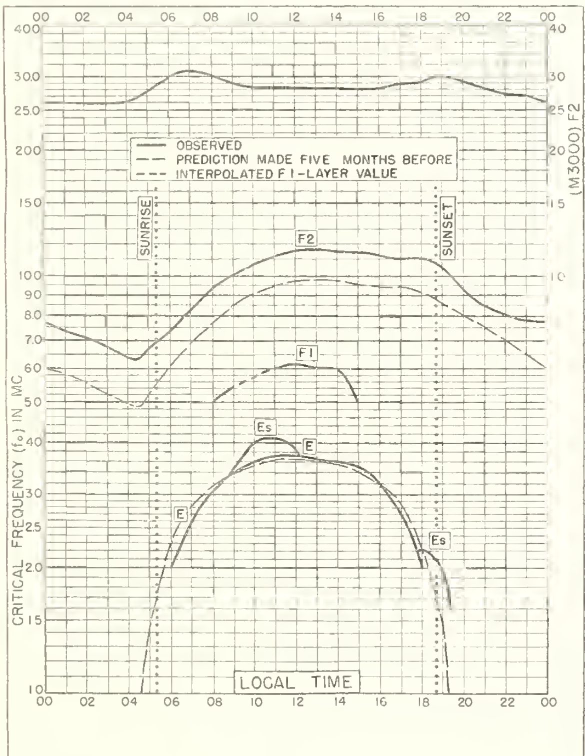

Fig. 67. FRIBOURG, GERMANY
48.1°N, 7.8°E APRIL 1949

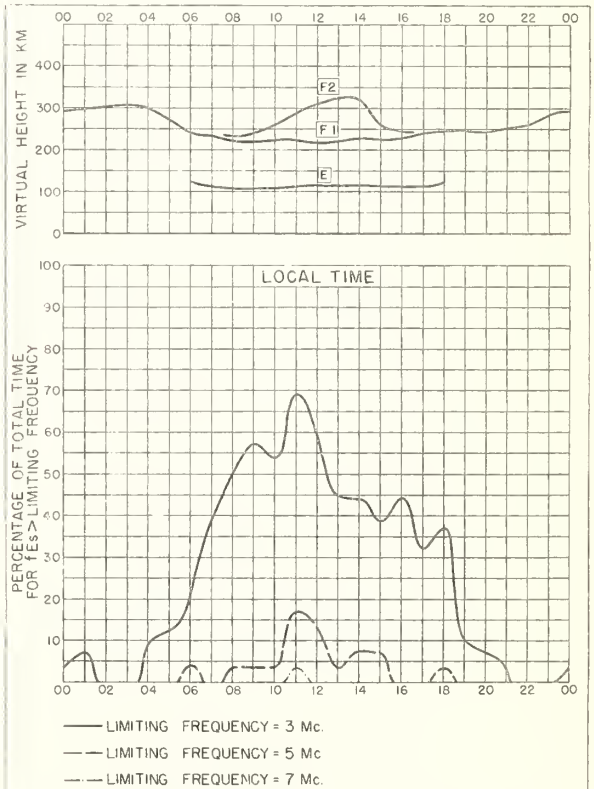

Fig. 68. FRIBOURG, GERMANY APRIL 1949

Index of Tables and Graphs of Ionospheric Data

in CRPL-F64

Index (CRPL-F64, continued)

CRPL and IRPL Reports

[A list of CRPL Section Reports is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards.
Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Weekly:

CRPL–J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL–Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL–D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11–499–, monthly supplements to TM 11–499; Dept. of the Navy, DNC–13–1 ( ), monthly supplements to DNC–13–1.)
CRPL–F. Ionospheric Data.

Quarterly:

*IRPL–A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.
*IRPL–H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.
NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:

IRPL–C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.
IRPL–G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.
IRPL–R. Nonscheduled reports:
- R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.
- R5. Criteria for Ionospheric Storminess.
- R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.
- R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.
- R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.
- R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.
- R12. Short Time Variations in Ionospheric Characteristics.
- R14. A Graphical Method for Calculating Ground Reflection Coefficients.
- R15. Predicted Limits for *F*2-Layer Radio Transmission Throughout the Solar Cycle.
- R17. Japanese Ionospheric Data—1943.
- R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.
- R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)
- R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.
- R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.
- R25. The Prediction of Solar Activity as a Basis for the Prediction of Radio Propagation Phenomena.
- R26. The Ionosphere as a Measure of Solar Activity.
- R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.
- R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.
- R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.
- R33. Ionospheric Data on File at IRPL.
- R34. The Interpretation of Recorded Values of *fEs*.
- R35. Comparison of Percentage of Total Time of Second-Multiple *Es* Reflections and That of *fEs* in Excess of 3 Mc.

IRPL–T. Reports on tropospheric propagation:
- T1. Radar operation and weather. (Superseded by JANP 101.)
- T2. Radar coverage and weather. (Superseded by JANP 102.)

CRPL–T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG–5.)

*Items bearing this symbol are distributed only by U. S. Navy. They are issued under one cover as the DNC–14 series.

[illegible]